

STATE OF NEW HAMPSHIRE

INTER-DEPARTMENT COMMUNICATION

DATE: July 21, 2020

FROM: Andrew O'Sullivan
Wetlands Program Manager

AT (OFFICE): Department of
Transportation

SUBJECT: Dredge & Fill Application
Westmoreland, 41624

**Bureau of
Environment**

TO: Karl Benedict, Public Works Permitting Officer
New Hampshire Wetlands Bureau
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Forwarded herewith is the application package prepared by NH DOT Bureau of Rail and Transit and Bureau of Bridge Maintenance for the subject major impact project. This project is classified as major per Env-Wt 303.02(p) of the NHDES Wetland rules pre-dating December 15, 2019. Westmoreland, #41624 is identified on NHDOT's list of projects to be considered under Env-Wt 305.02(e) of the rules approved Dec. 15, 2019 "... projects in the planning stages for which an application has not been filed as of December 15, 2019 should be subject to the design, approval, and construction criteria in effect prior to December 15, 2019..."

The project is located along the Cheshire Branch Railroad over Great Brook off of Halls Crossing Road in the Town of Westmoreland, NH. The proposed work consists of install a 12" thick concrete slab approximately 28' long x 11' wide on top of the concrete subfloor of a stone arch bridge and repair the damaged wing walls. For a more detailed project description see the included supplemental narrative within the permit application.

This project was reviewed at the Natural Resource Agency Coordination Meeting on several occasions. A copy of the minutes from each meeting has been included with this application package. A copy of this application and plans can be accessed on the Departments website via the following link: <http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/wetland-applications.htm>.

NHDOT Bureau of Environment, Matt Urban, Sarah Large, and Andrew O'Sullivan also met with Karl Benedict on 1/24/2020 to discuss the project's history and impacts. Additional follow up emails specific to mitigation with Karl Benedict and Lori Sommer occurred from 1/29/2020 through 3/24/2020. The permanent impacts necessary to stabilize and protect the historic stone arch bridge were determined to trigger mitigation and that NHDOT will pay a one-time in lieu fee payment of \$16,352.38 to the NHDES Aquatic Restoration Mitigation (ARM) fund as mitigation for the project. Please see the mitigation narrative included within the permit application for further details.

The lead people to contact for this project are Shelley Winters, Bureau of Rail and Transit (271-3497 or Shelley.Winters@dot.nh.gov), Steve Johnson Bureau of Bridge Maintenance (217-3667 or Steve.Johnson@dot.nh.gov) or Sarah Large, Wetlands Program Analyst, Bureau of Environment (271-3226 or Sarah.Large@dot.nh.gov).

A payment voucher has been processed for this application (Voucher #26585) in the amount of \$1,505.20. If and when this application meets with the approval of the Bureau, please send the permit directly to Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment.

AMO:sel
cc:
BOE Original
Town of Westmoreland (4 copies via certified mail)
David Trubey, NH Division of Historic Resources (Cultural Review Within)
Bureau of Construction
Carol Henderson, NH Fish & Game (via electronic notification)
Maria Tur, US Fish & Wildlife (via electronic notification)
Beth Alafat & Jeanie Brochi, US Environmental Protection Agency (via electronic notification)
Michael Hicks & Rick Kristoff, US Army Corp of Engineers (via electronic notification)
Kevin Nyhan, BOE (via electronic notification)

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WETLANDS PERMIT APPLICATION

Water Division/ Wetlands Bureau

Land Resources Management

Check the status of your application: www.des.nh.gov/onestop



RSA/Rule: [RSA 482-A/ Env-Wt 100-900](#)

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No.
			Check No.
			Amount
			Notes

1. REVIEW TIME: Indicate your Review Time below. To determine review time, refer to [Guidance Document A](#) for instructions.

☒ Standard Review (Minimum, Minor or Major Impact)

☐ Expedited Review (Minimum Impact only)

2. MITIGATION REQUIREMENT:

If mitigation is required, a Mitigation-Pre Application meeting must occur prior to submitting this Wetlands Permit Application. To determine if mitigation is required, please refer to the [Determine if Mitigation is Required Frequently Asked Questions](#).

Mitigation Pre-Application Meeting Date: Month: 04 Day: 18 Year: 2020

☐ N/A - Mitigation is not required

3. PROJECT LOCATION:

Separate wetland permit applications must be submitted for each municipality within which wetland impacts occur.

ADDRESS: **Cheshire Branch Rail Road off of Gilboa Road**

TOWN/CITY: **Westmoreland**

TAX MAP: **N/A**

BLOCK: **N/A**

LOT: **N/A**

UNIT: **N/A**

USGS TOPO MAP WATERBODY NAME: **White Bridge Brook**

☐ NA

STREAM WATERSHED SIZE: **2.17**

☐ NA

LOCATION COORDINATES (If known): **(Lat/Long) 42.99611, -72.38501**

☒ Latitude/Longitude ☐ UTM ☐ State Plane

4. PROJECT DESCRIPTION:

Provide a brief description of the project outlining the scope of work. Attach additional sheets as needed to provide a detailed explanation of your project. DO NOT reply "See Attached" in the space provided below.

The proposed action consists of repairs to a Stone Arch Culvert carrying White Bridge Brook under the Cheshire Branch Rail Road, approximately 900 feet east of Gilboa Road, in the Town of Westmoreland NH. Repairs to the Stone Arch Culvert will include construction of a new headwall, 8' high by approx. 40' long embankment retaining walls, and a concrete slab from the end of the failed structure to the remnant historic wingwalls. See supplemental narrative for a detailed description & project history.

5. SHORELINE FRONTAGE:

☒ N/A This does not have shoreline frontage.

SHORELINE FRONTAGE:

Shoreline Frontage is calculated by determining the average of the distances of the actual natural navigable shoreline frontage and a straight line drawn between the property lines, both of which are measured at the normal high water line ([Env-Wt 101.89](#)).

6. RELATED NHDES LAND RESOURCES MANAGEMENT PERMIT APPLICATIONS ASSOCIATED WITH THIS PROJECT:

Please indicate if any of the following permit applications are required and, if required, the status of the application.

To determine if other Land Resources Management Permits are required, refer to the [Land Resources Management Webpage](#).

Permit Type	Permit Required	File Number	Permit Application Status
Alteration of Terrain Permit Per RSA 485-A:17	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	_____	<input type="checkbox"/> APPROVED <input type="checkbox"/> PENDING <input type="checkbox"/> DENIED
Individual Sewerage Disposal per RSA 485-A:2	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	_____	<input type="checkbox"/> APPROVED <input type="checkbox"/> PENDING <input type="checkbox"/> DENIED
Subdivision Approval Per RSA 485-A	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	_____	<input type="checkbox"/> APPROVED <input type="checkbox"/> PENDING <input type="checkbox"/> DENIED
Shoreland Permit Per RSA 483-B	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	_____	<input type="checkbox"/> APPROVED <input type="checkbox"/> PENDING <input type="checkbox"/> DENIED

7. NATURAL HERITAGE BUREAU & DESIGNATED RIVERS:

See the [Instructions & Required Attachments](#) document for instructions to complete a & b below.

a. Natural Heritage Bureau File ID: NHB 20 - 0233


b. ☐ This project is within a [Designated River](#) corridor. The project is within ¼ mile of: _____; and
date a copy of the application was sent to the [Local River Management Advisory Committee](#): Month: ____ Day: ____ Year: ____

☒ N/A – This project is not within a Designated River corridor.

lrn@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

www.des.nh.gov

8. APPLICANT INFORMATION (Desired permit holder)			
LAST NAME, FIRST NAME, M.I.: NH Dept. Transportation			
TRUST / COMPANY NAME: NHDOT		MAILING ADDRESS: P.O.Box 483	
TOWN/CITY: Concord		STATE: NH	ZIP CODE: 03301
EMAIL or FAX: Andrew.O'Sullivan@dot.nh.gov		PHONE: 603-271-3226	
ELECTRONIC COMMUNICATION: By initialing here: AMO , I hereby authorize NHDES to communicate all matters relative to this application electronically.			
9. PROPERTY OWNER INFORMATION (If different than applicant)			
LAST NAME, FIRST NAME, M.I.:			
TRUST / COMPANY NAME:		MAILING ADDRESS:	
TOWN/CITY:		STATE:	ZIP CODE:
EMAIL or FAX:		PHONE:	
ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.			
10. AUTHORIZED AGENT INFORMATION			
LAST NAME, FIRST NAME, M.I.:		COMPANY NAME:	
MAILING ADDRESS:			
TOWN/CITY:		STATE:	ZIP CODE:
EMAIL or FAX:		PHONE:	
ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.			
11. PROPERTY OWNER SIGNATURE:			
See the Instructions & Required Attachments document for clarification of the below statements			
By signing the application, I am certifying that:			
<ol style="list-style-type: none"> 1. I authorize the applicant and/or agent indicated on this form to act in my behalf in the processing of this application, and to furnish upon request, supplemental information in support of this permit application. 2. I have reviewed and submitted information & attachments outlined in the Instructions and Required Attachment document. 3. All abutters have been identified in accordance with RSA 482-A:3, I and Env-Wt 100-900. 4. I have read and provided the required information outlined in Env-Wt 302.04 for the applicable project type. 5. I have read and understand Env-Wt 302.03 and have chosen the least impacting alternative. 6. Any structure that I am proposing to repair/replace was either previously permitted by the Wetlands Bureau or would be considered grandfathered per Env-Wt 101.47. 7. I have submitted a Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) to the NH State Historic Preservation Officer (SHPO) at the NH Division of Historical Resources to identify the presence of historical/ archeological resources while coordinating with the lead federal agency for National Historic Preservation Act (NHPA) 106 compliance. 8. I authorize NHDES and the municipal conservation commission to inspect the site of the proposed project. 9. I have reviewed the information being submitted and that to the best of my knowledge the information is true and accurate. 10. I understand that the willful submission of falsified or misrepresented information to the NHDES is a criminal act, which may result in legal action. 11. I am aware that the work I am proposing may require additional state, local or federal permits which I am responsible for obtaining. 12. The mailing addresses I have provided are up to date and appropriate for receipt of NHDES correspondence. NHDES will not forward returned mail. 			
 Property Owner Signature		STEVE W JOHNS Print name legibly	7/1/2020 Date

irm@des.nh.gov or (603) 271-2147

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www.des.nh.gov

MUNICIPAL SIGNATURES

12. CONSERVATION COMMISSION SIGNATURE

The signature below certifies that the municipal conservation commission has reviewed this application, and:

1. Waives its right to intervene per RSA 482-A:11;
2. Believes that the application and submitted plans accurately represent the proposed project; and
3. Has no objection to permitting the proposed work.

	Print name legibly	Date
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DIRECTIONS FOR CONSERVATION COMMISSION

1. Expedited review ONLY requires that the conservation commission's signature is obtained in the space above.
2. Expedited review requires the Conservation Commission signature be obtained **prior** to the submittal of the original application to the Town/City Clerk for signature.
3. The Conservation Commission may refuse to sign. If the Conservation Commission does not sign this statement for any reason, the application is not eligible for expedited review and the application will be reviewed in the standard review time frame.

13. TOWN / CITY CLERK SIGNATURE

As required by Chapter 482-A:3 (amended 2014), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.

	Print name legibly	Town/City	Date
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DIRECTIONS FOR TOWN/CITY CLERK:

Per RSA 482-A:3, I

1. For applications where "Expedited Review" is checked on page 1, if the Conservation Commission signature is not present, NHDES will accept the permit application, but it will NOT receive the expedited review time.
2. IMMEDIATELY sign the original application form and four copies in the signature space provided above;
3. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
4. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board; and
5. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:

1. Submit the single, original permit application form bearing the signature of the Town/ City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery.

lrn@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

www.des.nh.gov

14. IMPACT AREA:

For each jurisdictional area that will be/has been impacted, provide square feet and, if applicable, linear feet of impact.

Permanent: impacts that will remain after the project is complete.

Temporary: impacts not intended to remain (and will be restored to pre-construction conditions) after the project is completed.

Intermittent Streams: linear footage distance of disturbance is measured along the thread of the channel.

Perennial Streams/ Rivers: the total linear footage distance is calculated by summing the lengths of disturbance to the channel and each bank.

JURISDICTIONAL AREA	PERMANENT Sq. Ft. / Lin. Ft.	TEMPORARY Sq. Ft. / Lin. Ft.
Forested wetland	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Scrub-shrub wetland	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Emergent wetland	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Wet meadow	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Intermittent stream channel	/ <input type="checkbox"/> ATF	/ <input type="checkbox"/> ATF
Perennial Stream / River channel	1362 / 62 <input type="checkbox"/> ATF	616 / 25 <input type="checkbox"/> ATF
Lake / Pond	/ <input type="checkbox"/> ATF	/ <input type="checkbox"/> ATF
Bank - Intermittent stream	/ <input type="checkbox"/> ATF	/ <input type="checkbox"/> ATF
Bank - Perennial stream / River	1530 / 107 <input type="checkbox"/> ATF	255 / 30 <input type="checkbox"/> ATF
Bank - Lake / Pond	/ <input type="checkbox"/> ATF	/ <input type="checkbox"/> ATF
Tidal water	/ <input type="checkbox"/> ATF	/ <input type="checkbox"/> ATF
Salt marsh	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Sand dune	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Prime wetland	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Prime wetland buffer	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Undeveloped Tidal Buffer Zone (TBZ)	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Previously-developed upland in TBZ	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Docking - Lake / Pond	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Docking - River	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Docking - Tidal Water	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Vernal Pool	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
TOTAL	2,892 / 169	871 / 55

15. APPLICATION FEE: See the [Instructions & Required Attachments](#) document for further instruction

☐ Minimum Impact Fee or Fee for Non-enforcement related, publicly-funded and supervised restoration projects, regardless of impact classification (see RSA 482-A:3, 1(c)): Flat fee of \$ 400

☒ Minor or Major Impact Fee: Calculate using the below table below

Permanent and Temporary (non-docking) 3,763 sq. ft. X \$0.40 = \$ 1,505.20

Temporary (seasonal) docking structure: sq. ft. X \$2.00 = \$

Permanent docking structure: sq. ft. X \$4.00 = \$

Projects proposing shoreline structures (including docks) add \$400 = \$

Total = \$

The Application Fee is the above calculated Total or \$400, whichever is greater = \$ 1,505.20

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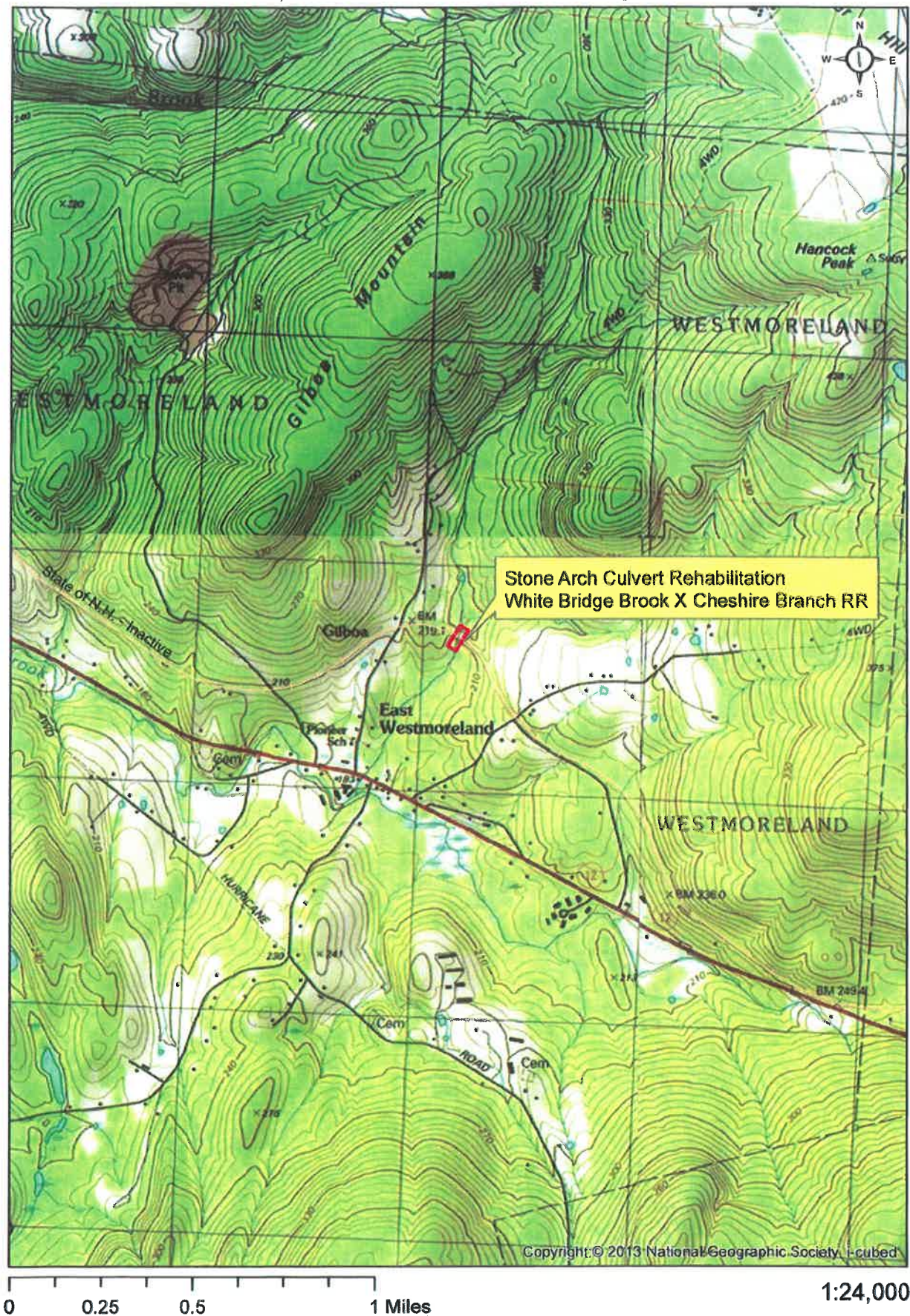
www.des.nh.gov

Supplemental Project Description:

The East Westmoreland Stone Arch Culvert (mile marker 100.5) carrying the Cheshire Railroad over White Bridge (aka Mill) Brook in Westmoreland, New Hampshire has undergone several emergency repairs and the lack of maintenance of stone culverts along the Cheshire Branch Railroad has been discussed at several Natural and Cultural Resources Agency Coordination meetings. A detailed summary of the previous work at this site has been included in the Cultural RPR which has been provided with the wetlands application to provide historical context of the work that's been completed at this site to date.

The work currently proposed in this wetlands application consists of installing a 2' thick x 15' wide x 45' long concrete slab extending from the existing slab to the wing wall remnants downstream with 16" thick x 8' high x 45' long concrete walls on either side connecting to and supporting the remaining stone arch blocks and the wing wall remnants. The work will also install a new headwall around the existing outlet location and place a 33' wide x 14' long stone apron to fill the area between the wing wall remnants in order to prevent further undermining due to backwatering. Finally, fabric and riprap will be installed around the headwall and along the exterior of the new walls to prevent erosion of the banks during overtopping flood events, which is anticipated during the kinds of large storm events which have previously caused damage to the culvert.

Westmoreland 41624 Location Map





WETLANDS PERMIT APPLICATION – ATTACHMENT A MINOR AND MAJOR - 20 QUESTIONS

Land Resources Management
Wetlands Bureau

Check the Status of your application: www.des.nh.gov/onestop



RSA/ Rule: RSA 482-A, Env-Wt 100-900

Env-Wt 302.04 Requirements for Application Evaluation - For any major or minor project, the applicant shall demonstrate by plan and example that the following factors have been considered in the project's design in assessing the impact of the proposed project to areas and environments under the department's jurisdiction. Respond with statements demonstrating:

1. The need for the proposed impact.

The need for the proposed action has been driven by the need to preserve a failing historical resource (stone arch bridge). A detailed discussion relative to the purpose and need for the proposed work along with a project history and timeline was previously prepared for the cultural resource, Request for Project Review (RPR). A detailed discussion along with a project history has been included in the RPR which has been included as an attachment to this wetlands application package. (see attached)

2. That the alternative proposed by the applicant is the one with the least impact to wetlands or surface waters on site.

Several alternatives were considered to address the failing structure.

Possible alternatives included:

- A) Concrete Header at Outlet (This is the least impactig and cost effective alternative and therefore was the chosen alternative).
- B) Removal of Entire Granite Arch
- C) Intallation of a Concrete Box or Open Bottom Culvert and Reatain Granite Arch.
- D) Install Bridge over White Brook and Maintain Cheshire Railroad.

A detailed discussion of the proposed alternatives was previously prepared for the cultural resource Request for Project Review (RPR). A detailed discussion has been incorporated into the RPR and has been included with this wetlands application package. (see attached).

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3. The type and classification of the wetlands involved.

The proposed work will have no impact to wetland resources.

The only impacts will be to surface waters and their banks (i.e. R3UB1H, Bank)

4. The relationship of the proposed wetlands to be impacted relative to nearby wetlands and surface waters.

Wetland impacts are not proposed. White Brook is the name of the surface water that will be impacted as a result of the proposed work. White Brook has a drainage area of 2.17 square miles and is considered a tier 3 stream.

5. The rarity of the wetland, surface water, sand dunes, or tidal buffer zone area.

White Brook is not considered a rare nor has it been adopted as a Designated River.

6. The surface area of the wetlands that will be impacted.

Total Permanent 2,892 S.F.

1,362 S.F. Channel

1,530 S.F. Bank

Total Temporary 871 S.F.

616 S.F. Channel

255 S.F. Bank

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7. The impact on plants, fish and wildlife including, but not limited to:
- a. Rare, special concern species;
 - b. State and federally listed threatened and endangered species;
 - c. Species at the extremities of their ranges;
 - d. Migratory fish and wildlife;
 - e. Exemplary natural communities identified by the DRED-NHB; and
 - f. Vernal pools.

The New Hampshire Department of Transportation has completed a an NHB and IPAC review for the proposed project area.

A. There were no Theatened or Endangerd (T&E) Species Identified in the NHB (NHB20-0233). The results of the IPAC search identified the Northern Long Eared Bat. The Department has subsequently completed USFWS consultation and received the 4(d) consistency letter.

B. Same as above.

C. There are no identified or known species located at the extremity of their ranges located within the propsoed project limits.

D. There are no known migratory fish or wildlife that would be impacted as a result of the propsoed work.

E. There were no Exemplary Natural Communities Identified by DRED-NHB in the proposed project area.

F. There were no Vernal pools delineated or identified in proximity to the poropsed project.

8. The impact of the proposed project on public commerce, navigation and recreation.

The propsoed project will have no impact to Public Commerce or Navigation. There Cheshire Railroad is used as a walking trail by locals and there may be a temporary inturpution to the recreational use of the former rail line as a walking trail for the duration of the proposed construction. Access to the trail will be restored following the completion of work.

9. The extent to which a project interferes with the aesthetic interests of the general public. For example, where an applicant proposes the construction of a retaining wall on the bank of a lake, the applicant shall be required to indicate the type of material to be used and the effect of the construction of the wall on the view of other users of the lake.

The project as proposed will not interfere with the general aesthetic interest of the general public. The stone arch culvert is located in an area off of the Cheshire Railroad that is not visible to the public. Nevertheless, the nature of the propsoed preservation efforts for the purpose of saving this historical resource is intened to also preserve the aesthetics of the stone arch.

10. The extent to which a project interferes with or obstructs public rights of passage or access. For example, where the applicant proposes to construct a dock in a narrow channel, the applicant shall be required to document the extent to which the dock would block or interfere with the passage through this area.

There Cheshire Railroad is used as a walking trail by locals and there may be a temporary inturpution to the recreational use of the former rail line as a walking trail for the duration of the proposed construction. Access to the trail will be restored following the completion of work.

11. The impact upon abutting owners pursuant to RSA 482-A:11, II. For example, if an applicant is proposing to rip-rap a stream, the applicant shall be required to document the effect of such work on upstream and downstream abutting properties.

The proposed work will not impact upstream or downstream abutting property owners. Hydrualic calculations have been included elsewhere in this wetlands application package that support this determination.

12. The benefit of a project to the health, safety, and well being of the general public.

The proposed action will stabilize the historic stone arch from continued failure that it has experienced in the past. Stabilizing this structure will impove safety for the public who walk over the structure on the rail trail. Preserving this structure will also ensure that there is not a catostrophic failure that could have downstream effects to the next bridge located on NH Route 12.

13. The impact of a proposed project on quantity or quality of surface and ground water. For example, where an applicant proposes to fill wetlands the applicant shall be required to document the impact of the proposed fill on the amount of drainage entering the site versus the amount of drainage exiting the site and the difference in the quality of water entering and exiting the site.

The proposed project will not result in impacts to the quantity or quality of surface and groundwater. Site specific BMP's will be implemented prior to the start of construction and maintained throughout construction until the site has been stabilized. See erosion control plans for more details relative to the protection of water quality through the use of BMPs.

14. The potential of a proposed project to cause or increase flooding, erosion, or sedimentation.

The project as proposed will not cause an increase to flooding, erosion, or sedimentation. Hydraulic calculations have been provided elsewhere in this application package demonstrating that there will be no increase to flooding.

15. The extent to which a project that is located in surface waters reflects or redirects current or wave energy which might cause damage or hazards.

The project as proposed will not reflect or redirect the surface waters. As part of the proposed design for structural stabilization the Department has incorporated an approximate 40' long embankment stabilization wall that maintains a straightened channel that follows the naturally straight section of the brook further downstream.

16. The cumulative impact that would result if all parties owning or abutting a portion of the affected wetland or wetland complex were also permitted alterations to the wetland proportional to the extent of their property rights. For example, an applicant who owns only a portion of a wetland shall document the applicant's percentage of ownership of that wetland and the percentage of that ownership that would be impacted.

it's not likely that there would be similar work proposed along this length of stream within the Departments owned ROW.

17. The impact of the proposed project on the values and functions of the total wetland or wetland complex.

There are no wetlands propsoed to be impacted as a result of the propsoed work. The streams function and value will be unaltered as a result of the propsoed work.

18. The impact upon the value of the sites included in the latest published edition of the National Register of Natural Landmarks, or sites eligible for such publication.

None.

19. The impact upon the value of areas named in acts of congress or presidential proclamations as national rivers, national wilderness areas, national lakeshores, and such areas as may be established under federal, state, or municipal laws for similar and related purposes such as estuarine and marine sanctuaries.

None.

20. The degree to which a project redirects water from one watershed to another.

The project as proposed will not redirect water from one watershed to another.

Additional comments

BUREAU OF ENVIRONMENT CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting

DATE OF CONFERENCE: April 18, 2018

LOCATION OF CONFERENCE: John O. Morton Building

ATTENDED BY:

NHDOT

Matt Urban
Sarah Large
Marc Laurin
Keith Cota
Mark Hemmerlein
Chris Carucci
Meli Dube
Bob Landry
Don Lyford
Bill Saffian
Trent Zanes
Brian Lombard
Maggie Baldwin
Kevin Nyhan
Bob Juliano
Steve Johnson
Shelly Winters

ACOE

Mike Hicks

Federal Highway

Jamie Sikora

EPA

Mark Kern

US Coast Guard – Bridges

Jim Rousseau

NHDES

Gino Infascelli
Lori Sommer
Tim Drew
Chris Williams

NHF&G

Carol Henderson

NH Natural Heritage

Bureau

Amy Lamb

NH Office of Energy and

Planning

Jennifer Gilbert
Samara Ebinger

**NH Department of Business
& Economic Affairs**

Jimmie Hinson

Consultants/Public

Participants

Chris Bean
Leo Tidd
Vicki Chase
Pete Walker
Christine Perron
Jim Fougere
Janusz Czyzowski
Colin Lentz

(When viewing these minutes online, click on an attendee to send an e-mail)

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH: *(minutes on subsequent pages)*

Finalization of March 21 st 2018 Natural Resource Agency Meeting Minutes.....	2
Derry- Londonderry, #13065 (IM-0931(201))	2
Newington-Dover, #11238S (NHS-027-1(037)).....	5
Alexandria, #15937 (X-A1(047)).....	7
Concord-Pembroke, #41267 (X-A004(575))	8
Portsmouth-Kittery, #15731 (A000(909)).....	10
Hinsdale-Brattleboro, #12210C (A004(152))	11
Haverhill-Benton, #41297 (X-A004(587)).....	13
Westmoreland, #41624 (Non-Federal).....	14

(When viewing these minutes online, click on a project to zoom to the minutes for that project)

He would double check on the Shoreland issue. Otherwise, the wetland field work will be conducted as the weather cooperates but the bridges are fairly straight forward so no unusual issues are expected.

No other comments.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meetings.

Westmoreland, #41624 (Non-Federal)

Meli Dube, NHDOT Bureau of Environment, introduced the project. This work is part of an on-going effort to stabilize the outlet of a historic stone-arch culvert carrying the Cheshire Branch Rail Road Rail Trail over White Bridge Brook in the Town of Westmoreland. This area has seen significant damage due to flooding during large storm events including erosion and gradual collapse of the culvert over the course of several years. This project is subject to tight deadlines and budgetary restraints, as it is financed completely through Capital Funds with no federal contribution. The US Army Corps of Engineers will be the lead federal agency.

Brian Lombard, NHDOT Bureau of Rail and Transit, provided a detailed history of the damage, work and permitting that has occurred at the site. NHDES Permit 2003-02440 was issued in 2003 to clean up debris from a portion of the arch that collapsed earlier that year during a large storm event, FEMA Disaster #1489. Due to continued erosion and stone arch collapse, NHDES issued Permit 2008-01389 in 2008 to allow installation of a concrete pad floor inside the culvert to prevent undermining of the sidewalls. Continued collapse required the Rail Road embankment to be pushed back off of the end of the culvert in 2010. NHDES Permit 2008-01389 was amended in 2011 to allow installation of concrete toe walls under a side wall at the outlet of the arch. A series of heavy storms in 2013 resulted in additional collapse and washouts, emergency work to clear the stream and stabilize the area was performed under FEMA Project 24761 and NHDES Permit 2013-01945. Work at this project site was previously reviewed at the April 21, 2010 Natural Resource Agency Meeting.

B. Lombard indicated that the Rail and Transit will be partnering with the Bureau of Bridge Maintenance again to accomplish the work in order to meet budgetary restraints. Bridge Maintenance has assessed the current condition and developed a proposed plan. Remnants of the old stone wingwalls which mark the original end of the culvert are still in place approximately 45 feet downstream from the existing outlet. During flood events, water is trapped and creates a backwater which continuously erodes the base of the stone arch culvert and undermines the existing concrete slab that was installed in the culvert in 2008. The downstream channel also experiences significant erosion during flooding events and carrying streambed material several hundred feet downstream. Bridge Maintenance has proposed installing a headwall around the existing outlet, a 2' thick x 15' wide x 45' long concrete slab extending from the existing slab to the wingwalls downstream with 16" thick x 8' high x 45' long concrete walls on either side connecting to and supporting both the remaining stone arch and the wingwall remnants. The work will also pour an additional 8" thick x 33' wide x 14' long concrete slab apron to fill the area

between the wingwall remnants to ensure that the stone base is preserved from additional erosion. Finally, fabric and riprap will be installed around the headwall and along the new walls to prevent erosion during overtopping flood events. The intent of this approach is to preserve the remaining stone arch, the remaining wingwall remnants and prevent continued erosion of the stream.

B. Lombard detailed the anticipated wetland impacts based on the proposed slab and wall installations. Anticipated permanent impacts to the channel total 1,137, permanent impacts to the bank total 656 square feet and temporary impacts to the bank total 820 square feet. There is currently riprap extending 41' long x 20' wide on both sides of the stream, which will be reduced to a 41' x 10' wide strip which will reduce the area of riprap by 820 square feet.

Carol Henderson, NH Fish and Game, observed that it appears no tree clearing will be necessary based on the photos shown by B. Lombard. M. Dube confirmed that all tree around the work area have been previously cleared. Mike Hicks, US Army Corps of Engineers, stated that this work would likely have "No Effect" on northern long-eared bats and the 4(d) rule would be appropriate. M. Hicks also asked about coordination regarding Section 106 of the National Historic Preservation Act. M. Dube explained that the previous work which occurred in 2011 under the amended 2008-01389 NHDES Wetlands Bureau permit was determined to have an adverse effect on the historic stone arch and that the work in 2011 was considered to be Phase 1, this effort is considered to be a continuation of that adverse effect finding under Phase 2. Mitigation for the adverse effect finding was completed through a series of inspections and inventories of all the stone arch culverts in the surrounding area. M. Dube confirmed that continued coordination with the State Historic Preservation Officer is scheduled and will be completed appropriately.

C. Henderson inquired about the depth of the existing slab and the need for the depth of the proposed slab. Steve Johnson, NHDOT Bridge Maintenance, stated that the existing slab is between 8"-1' thick to cover the streambed and prevent undermining. The existing slab does have baffles to assist with fish passage. The proposed slab would be 2' thick and tie in to the elevation of the current slab, baffles could be installed on the proposed slab as well. S. Johnson noted that it would not be necessary to excavate down the entire 2' throughout the stream channel in order to install this slab due to erosion of the streambed. S. Johnson also stated that this depth of slab is necessary to install the sidewalls with minimal excavation and disturbance. Gino Infascelli, NHDES Wetlands Bureau, noted that he has been to the site several times and has seen fish using the stream on the outlet side. B. Lombard noted that the crossing does not convey any notable depth during low flow conditions.

M. Hicks asked if the culvert is considered undersized given the history of flooding. B. Lombard responded that it likely is just for the large storm events, but that replacement and installation of a full span stream-crossing compliant structure is outside the available funding and would result in a loss of the historic resource. B. Lombard provided a brief explanation of some alternatives considered, including reconstruction of the stone arch culvert, replacement and resizing, and all were considered to be infeasible. G. Infascelli noted that the proposed design, while preserving the historic elements, presents a significant loss of stream channel. S. Johnson explained that even if the full slab is not installed, the existing slab would need to be reinforced and armored and the collapsing stone arch stabilized in some way. M. Dube noted that the stream channel is currently heavily disturbed due to the continued erosion and placement of stone.

Matt Urban, NHDOT Bureau of Environment, suggested that mitigation be calculated for linear feet of impacts to the stream channel from the concrete pad and not to the banks as the walls are going in the same place as the existing riprap so the banks have already been highly disturbed. G. Infascelli stated that Lori Sommer, NHDES Wetlands Bureau, would need to be consulted to confirm this approach.

This project has been previously discussed at the April 21, 2010 Monthly Natural Resource Agency Coordination Meeting.

BUREAU OF ENVIRONMENT CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting

DATE OF CONFERENCE: April 21, 2010

LOCATION OF CONFERENCE: John O. Morton Building

ATTENDED BY:

NHDOT

C.R. Willeke
Christine Perron
Don Lyford
Jim Bowles
Jon Evans
Kevin Nyhan
Larry Keniston
Michelle Marshall
Randy Talon

Army Corps of Engineers

Rich Roach

EPA

Mark Kern

NHDES

Gino Infascelli
Laura Weit-Marcum
Lori Sommer

NH Fish and Game

Carol Henderson

NH DRED

Bill Gegas

Town of New London

Jessie Levine
Richard Lee

City of Rochester

Rich Healey

CT River Joint

Commissions
Sharon Francis

Srafford Regional Planning

Commission
Dan Camara

CHA

Kevin Thatcher

(When viewing these minutes online, click on an attendee to send an e-mail)

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH:

(minutes on subsequent pages)

Finalization of March 17, 2010 Meeting Minutes.....	2
Rochester, NHS-027-1(36), 10620D.....	2
New London, X-A000(764), 15534	2
Walpole-Charlestown, X-A000(487), 14747	4
Westmoreland & Walpole (no project number)	5

(When viewing these minutes online, click on a project to zoom to the minutes for that project)

property was established through the NH Land and Community Heritage Investment Program (LCHIP) and the conservation easement is held by The Nature Conservancy (TNC). This conservation property was established for the purposes of protecting the northeastern bulrush (*scirpus ancistrochaetus*), a federally listed endangered species. J. Evans indicated that coordination with the necessary agencies and organizations on the project's impacts to this property was ongoing.

J. Evans indicated that the project would require wetland mitigation. He noted that coordination with DRED and LCHIP had indicated the presence of a property, approximately 1-acre in size, which is fully contained within the existing DRED/LCHIP property. He indicated that the possibility of placing this property into some form of conservation was something that the Department intends to look into further. With the exception of this property no other mitigation opportunities have been identified. He indicated that during the CSS process, the local conservation commissions and the Connecticut River Joint Commissions were involved in the preliminary design of the project, and to date had not indicated any mitigation opportunities. As a result, J. Evans indicated that the Department anticipates offsetting the necessary wetland impacts with a payment into the Aquatic Resource Mitigation Fund.

M. Kern and R. Roach indicated that they would like to see the Department examine the possibility of using bioengineering when designing the necessary slope treatments. C.R. indicated that the Department would look into these but indicated that they may result in increased wetland impacts.

Sharon Francis indicated that the Connecticut River Joint Commissions (CRJC) has been involved with this project from the very beginning and is in full support of the preferred alternative. She indicated that her recent interactions with the local public have indicated substantial public support for the chosen alternative. She also noted that the CRJC would like to see the Department look into the possibility of providing a small pull-off in the Meany's Cove area to allow parking for fishing, nature viewing or car-top boat launching.

(Project website) (NHB File #: NHB09-2261) *This project was previously reviewed on the following dates: 4/18/2007, 8/20/2008, 5/20/2009 & 10/29/2009.*

Westmoreland & Walpole (no project number)

Christine Perron gave an overview of a Rail & Transit project that will address two failing stone arch culverts along the Cheshire Branch rail line (now a recreational trail). Both culverts were constructed in the 1800s.

The Westmoreland culvert is 15' x 13.5' x 180' and carries an unnamed perennial stream that outlets into Mill Brook. This culvert started to fail following a flood event in 2003. Two permits have been issued to the NHDOT for this site: 2003-02440 (to remove granite blocks from the stream and stabilize the bank); 2008-01389 (to install a concrete floor with baffles). Due to lack of funding, Rail & Transit did not stabilize the failing outlet end of the culvert when damage first occurred. Earlier this year, a hole developed in the ceiling of the culvert near the outlet, which eventually allowed roots and sediment to fall into the culvert and cause a partial blockage. Rail &

Transit proposed a two-phased project to address this. The first phase, which is supposed to take place in the very near future, will consist of 1) clearing trees along the RR embankment and 2) removing fill to lower the embankment at the outlet. The second phase, which is contingent upon the availability of funds and approval from SHPO, will consist of removing approximately 30' of the collapsing culvert outlet and constructing a new headwall. The large amount of fill removed during the first phase will be placed in a RR cut to the east of the culvert. The trail in this location was cut off by a town road when a bridge was removed. The fill will be used to create a gradual ramp from the trail to the town road and will eventually reestablish trail connectivity. A photograph of the RR cut was shown and C. Perron said that it was her assessment that this wet portion of the abandoned trail does not meet the definition of a wetland or any other jurisdictional area. Gino Infascelli indicated that he would defer to her assessment of the site and a permit would not be required for placing the fill at this site. When the scope of the second phase of the project is determined, the project will be brought back to the Natural Resource agencies for review.

The Walpole culvert is 19' x 19' x 150' and carries Houghton Brook, which outlets into the Connecticut River approximately 1.5 miles downstream of the culvert. A portion of the culvert's ceiling near the inlet end has failed, creating a large sinkhole in the RR embankment. The interior of the culvert now contains a large pile of roots and sediment, which is causing a substantial blockage. The concern with both of these culverts is the potential for complete blockage to occur. Because of the substantial amount of fill over both culverts, a large amount of water could back up. If that water eventually burst through the rail corridor, substantial downstream flooding and damage could occur. Rail & Transit proposed a two-phased project to address the Walpole culvert. As with Westmoreland, the first phase will entail 1) the removal of fill from the top of the culvert and 2) the removal of the roots and sediment from inside the culvert. Excavated fill will be placed in another RR cut to the west of the culvert. The site does not contain wetlands and will not require a permit. C. Perron asked for confirmation that a permit would be needed to remove debris from inside the culvert. It was agreed that a permit would be needed. The second phase of the project, which is contingent upon the availability of funds and approval from SHPO, will consist of patching the hole in the culvert with concrete. This would require a permit for temporary impacts to the stream. Rich Roach indicated that the work in Walpole would be exempt from Army Corps jurisdiction.

(NHB File #: NHB10-0496) (NHWB Permit #: 2008-01389) *This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.*

**BUREAU OF ENVIRONMENT
CONFERENCE REPORT**

DATE OF CONFERENCE: December 17, 2003

LOCATION OF CONFERENCE: John O. Morton Building

ATTENDED BY:

NHDOT

Mark Hemmerlein
Charlie Hood
Chris Waszczuk
Kevin Nyhan
Bill Oldenburg
Marc Laurin
Keith Cota
Bill Cass
Mike Pillsbury
Ron Crickard
Bill Hauser
Trent Zanes
Den Danna
Bob Landry

**Federal Highway
Administration**
Bill O'Donnell

Army Corps of Engineers

Rich Roach
Frank DelGiudice

**National Marine
Fisheries Service**

Mike Johnson
Marcy Scott
Lou Chiarella

EPA

Mark Kern

National Park Service

Margaret Watkins

NH Wetlands Bureau

Lori Sommer
Gino Infascelli
Carolyn Russell

**NH Fish and Game
Department**
Bill Ingham

**Office of Emergency
Management**
Tylor Young

VHB
Bill Barry

**Stratford Regional
Planning Commission**
Tim Roache

**Lamprey River Advisory
Committee**
Judith Spang

SUBJECT: Natural Resource Agency Meeting

Salem-Manchester, IM-IR-93-1(174)0, 10418C

B. Cass updated the group on the project. The FEIS, as well as the Special Committee report, will be finalized in early 2004. M. Kern inquired about the possibility of holding a public meeting to update the public on the salt issues. B. Cass responded that there will be general meetings in the corridor after approval is received from the Special Committee, but none specific to salt are planned. This issue will be thoroughly covered in the FEIS. B. O'Donnell stated that the Department will be working with UNH T² to train town operators, as well as salt issues being addressed in a different forums. B. Cass stated that the NPDES2 awareness and outreach process is also on-going. B. Barry, from VHB, provided a handout, which reviewed the sequential approach to mitigation that had been followed for the I-93 project whereby initially the highway alignment was shifted east or west to avoid wetlands or other critical resources. Following this alternative-design analysis, measures to minimize unavoidable impacts along the mainline as well as at the interchanges were also identified and incorporated into the preferred alternative's design. B. Barry

look into an alternative that had "no net loss" of wetlands. This portion of the Merrymeeting River is included in a NHF&G wildlife management area. In addition to the "no net loss" option, the Department presented three other alternatives. They included an upstream replacement, a downstream replacement and an on-alignment replacement. At the June meeting it was determined that the natural resource impacts that would be associated with an upstream replacement would be too great. Therefore it was dismissed, and the Department has focused its attention on the remaining alternatives.

The Average Daily Traffic (ADT) on this section of roadway is approximately 11,000 vehicles per day during the summer. As such, phased construction on-alignment is not possible. no matter what alternative is selected, an additional bridge over the river will be required for temporary use during construction.

Trent Zanes stated that the Department currently has two (2) viable alternatives.

- The first alternative involves replacing the bridge on-alignment with a downstream detour bridge. This alternative would involve 1,985 square feet of temporary impacts, and approximately 10,600 square feet of permanent impacts.
- The second alternative involves constructing a new bridge downstream of the existing one. This alternative has more wetland impacts (4,049 square feet of permanent impact). In an effort to try to mitigate the impacts, there would be approximately 2,405 square feet of mitigation associated with the removal of fill from the old bridge.

The Department's first attempt at each design resulted in approximately 6,900 square feet of permanent impact associated with the on-alignment alternative, and approximately 11,000 square feet of impacts with the downstream alternative. The reduction in impacts was the result of extending the U-back wing walls, reducing the footprint of fill required around the structure.

The on-alignment alternative is the one that the Department prefers at this point due to the minimized wetland impacts in conjunction with the better sight distance and improved geometry associated with it. The construction costs for the two (2) alternatives are approximately \$680,000.00 for the on-alignment alternative, and \$560,000.00 for the downstream alignment. The Department was unable to achieve "no net loss" due to height of the structure that would be required. Additionally, a "no net loss" structure would cost approximately \$1,750,000.00.

K. Nyhan stated that the temporary impacts associated with the on-alignment alternative are associated with the construction of a temporary bridge. R. Roach concurred that the Department proceed with the on-alignment alternative. No one in attendance requested mitigation for this project.

Westmoreland, X-A000(206), 14109

Kevin Nyhan began the presentation by describing the proposed project, which involves permanent fixes to several emergency repairs conducted during the summer of 2003. During the month of August, two separate storms dumped as much as 4-5" of rain each in a one-hour time period on western NH. Subsequently, Mill Brook rose and washed out portions of NH Route 12 and NH Route 63 in Westmoreland.

Emergency repairs consisted of stabilizing the eroded bank of Mill Brook on NH Route 12. Stone was placed, in many instances on a nearly vertical face and in running water to halt further erosion. This stone was not keyed and there is no geotextile matting behind it for structural support. Six bridges along both corridors still require some level of stabilization, re-armoring. K. Nyhan stressed that the emergency repairs have already been completed under an emergency authorization issued by the DES Wetlands Bureau. The permit application that will be requested for the permanent fixes proposed as part of this project, will be under an "after-the-fact" application to fulfill requirements of Part Wt 503 of the Wetlands Bureau Administrative Rules. The existing repairs are only temporary and will suffice for the winter. It is not however, a long-term solution.

Chris Carucci discussed the proposed roadway improvements. The main reason that NH Route 12 washed out during the high precipitation events was due to the capacity of the culvert that carries Beaver Brook under the roadway to its outlet at Mill Brook. Beaver Brook overtopped the roadway, opening up the slope, while Mill Brook eroded the bank further and carried the debris downstream. Maintenance District 4 forces placed the stabilization stones along approximately 2,500 linear feet of bank, backfilled with bank run sand and gravel and reestablish the pavement. The toe-of-slope was placed closer to the roadway than the existing stream channel. To permanently secure the bank, the proposed project will remove the rock that District 4 placed, key it into the channel and place it back on a 1.5/1 slope. The toe of the proposed channel will be approximately 5'-6' further away from the roadway than the emergency repair. In lieu of the stone, the Department considered constructing a concrete retaining wall at this location, however due to the minor encroachment on the stream channel, the cost and environmental considerations, stone is being proposed. The jersey barrier erected to protect motorists will be replaced with standard beam guardrail. K. Nyhan stated that along NH Route 12 the vast majority of the jurisdictional impacts will be bank impacts, although there will be channel impacts due to the keying in of stone at the 1.5/1 slope. The preliminary estimate of bank impacts along Mill Brook on NH Route 12 is 0.5-0.75 acre.

Lou Chiraella asked what the channel impacts would be to key in the new stone. C. Carucci stated that the streambed is gravelly, and design is awaiting a geotechnical analysis to determine the exact stone treatments and footprint impact. In all areas the new stone would not be encroaching that much on the streambed. There are areas where the ordinary high water line is further away from the scoured stream channel so there would be no great impact on the channel in certain areas. Rich Roach requested that the proposed stream channel cross section be similar to that above and below the work area to keep it as natural as possible. Wayne Clifford responded that the proposed stream channel is similar to that above and below. During periods of low water the stream is very shallow, and the proposed embankment stabilization will be very close to where it was before the precipitation events.

The Route 63 location experienced a similar situation in that the corrugated metal cross pipe that carries an unnamed perennial stream tributary to Partridge Brook under the roadway was not of sufficient capacity to pass the flowage. It was able to pass approximately the 1-year storm event. The proposed structure at this location will be designed to pass the 25-year, or 40-year storm event. The current channel alignment is not conducive to pass the flow, therefore the proposed structure will be slightly further to the north and at a skew to better align the upstream and downstream portions. Additionally, an old culvert that carries this stream under a drive will also be replaced and upsized to pass the 25-year, or 40-year storm event.

K. Nyhan stated that the original design called for a completely redesigned stream channel downstream of the crossing to completely pass the design storm. However, further investigation

into the hydraulics indicates that under the proposed design the small floodplain on the west side of the roadway can be used to contain the flooding. The Bureau of Right-of-Way is still looking into the right-of-way needs in the area.

Bob Aubrey stated that there are several bridges along both portions of roadway that will require some level of re-armoring. The first bridge (#109/124) has some undermining of the wing walls due to the deposition of material at the northeast quadrant of the bridge forcing water to flow under it at a skew angle. The Department may need to place stone at both the upstream and downstream wings. The second bridge (#167/122) built in the 1940's-1950's underwent significant scour during the rain events. The landowner built a large berm along the downstream bank. The Department proposes to armor the wing walls. The third structure (#163/129) is just to the west along NH Route 12. Due to a relocation of the channel at some point in the past, water approaching the bridge is at a skew to the structure, causing some scour and approximately 1'-1.5' of one footing is exposed. The Department proposes to re-armor it with stone. The fourth bridge (#145/131), just to the west is a three span structure. Approximately 2' of the footing of the pier nose is exposed and requires re-armoring with stone. Additionally, one of the upstream wings is exposed. The last bridge (#125/122) further to the west along NH Route 12 similarly requires armoring at the wings.

The advertising date for this project is currently May of 2004. In total the wetland impacts are approximately 1.25 acres of permanent impacts. A permit application will be submitted shortly. R. Roach indicated that this project would qualify for a State Programmatic General Permit.

Durham-Newmarket, STP-TE-X-5133(009), 13080

J. Butler described the project, which is located along NH Route 108 in the towns of Durham and Newmarket. The project begins a few hundred feet south of the bridge over the Oyster River in Durham, and extends southerly approximately 3.5 miles to the bridge over the Lamprey River in Newmarket. The primary intent of the project is to add 4-foot shoulders to improve bicycle safety, with other safety improvements including drainage and guardrail upgrades. Additionally, there are several intersections within the corridor that will be improved. Largely, the project will maintain the existing alignment and profile.

Proceeding south from the Oyster River Bridge along NH Route 108, the project will maintain the existing 'Y' intersection at Durham Point Road, with a left turn lane or bypass shoulder along NH Route 108 being considered at this location. Further south, the only bridge in the project area consists of a 10'-12' concrete span over Longmarsh Brook (Hammel Brook). The bridge is already wide enough to accommodate the proposed 4-foot shoulders. At the intersection of Bennett Road several alternatives are being considered to improve the intersection and reduce the abrupt crest on Bennett Road. South of this location is a 0.75-mile section of roadway commonly referred to as the "flats." This is an area dominated by wetlands on each side of the roadway. South of the "flats," a left turn lane or bypass shoulder is proposed at the Stagecoach Road intersection. In Newmarket, curbing and sidewalks are proposed on both sides of NH Route 108. The project terminates just north of the bridge over the Lamprey River in the downtown area of Newmarket.

The 0.75-mile "flats" is not only flat, it is also approximately 1.5 feet below the 100-year flood elevation. District 6 Maintenance personnel indicate that periodically (once every several years) the water table rises enough to flood the roadway, causing a closure. It is not a destructive event, but more of a bathtub-type ponding event. The "flats" are also a transition spot for two (2) watersheds (Lamprey River to the south and Oyster River to the north). During flood events the

Westmoreland, 41624

Mitigation Narrative

The Department explored several mitigation alternatives for the Westmoreland 41624 project resulting in a meeting with NHDES on January 24th to discuss the project and mitigation. Subsequently there were several back and forth emails that we will refer to as the January 29 and the March 24th, 2020 coordination emails with NHDES (See attached).

Through the coordination with NHDES it was determined that no mitigation would be required for the proposed work along the banks of the river where the banks were previously impacted. (See January 29th email).

At the recommendation of NHDES the Department evaluated a few channel simulation options for the proposed channel impacts. For various reasons as described in the March 24th email it was determined that stream simulation was not a viable option and therefore the Department would be completing mitigation in the form of a single and onetime payment into the Arm-Fund for the total length of impacts to the channels as proposed on the plans and impact summary table. NHDES concurred with this approach in the March 24th 2020 email (see attached).

The Department has prepared the Arm-Fund Calculator for Stream Impacts to calculate the cost for the 62 linear feet of impacts proposed to the channel of the stream. This resulted in a total mitigation in lieu fee payment in the amount of \$16,352.38 (see attached calculator).

Since the Department is mitigating for stream impacts via the Arm-fund with no proposed simulation it is not anticipated that any post construction monitoring would be required.

Large, Sarah

From: Benedict, Karl
Sent: Tuesday, March 24, 2020 10:19 AM
To: Urban, Matt; Sommer, Lori
Cc: Large, Sarah; OSullivan, Andrew; Dube, Melilotus
Subject: RE: Westmoreland, 41624

Hi Matt,

Thank you for the follow-up. Due to the historical resource, the structural design assessment, and the associated design requirements NHDES can concur with the proposed ARM payment compensatory mitigation for this project. The evaluation of alternatives considered will be helpful information to be included with the application submittal. Stay well,

Karl Benedict, Public Works Subsection Supervisor
Land Resources Management
Water Division, NH Department of Environmental Services
29 Hazen Drive, PO Box 95
Concord, NH 03302
Phone: (603) 271-4188
Fax: (603) 271-6588
Email: Karl.Benedict@des.nh.gov



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From: Urban, Matt <Matt.Urban@dot.nh.gov>
Sent: Tuesday, March 24, 2020 9:10 AM
To: Benedict, Karl <Karl.Benedict@des.nh.gov>; Sommer, Lori <Lori.Sommer@des.nh.gov>
Cc: Large, Sarah <Sarah.Large@dot.nh.gov>; OSullivan, Andrew <Andrew.Osullivan@dot.nh.gov>; Dube, Melilotus <Melilotus.Dube@dot.nh.gov>
Subject: Westmoreland, 41624

Hi Karl and Lori,

Hope you guys are fairing well during this crazy time.

I wanted to reach out to the both of you pertaining to our mitigation proposal for Westmoreland 41624 project. If you recall this is the old historic stone arch structure that has been progressively failing for the last several years. We have been working with the Division of Historical Resources to preserve what's left of the structure.

We had a prior meeting with Karl (Lori at the time you couldn't make it but Karl went back and discussed the meeting with you) at that meeting Karl recommended we look at a few channel simulation options to potentially

help us reduce mitigation costs.

One alternative we looked at was simulated bed material placed over structural rip rap.

The second alternative we explored was to cast cobbles and boulders into the proposed concrete as a pseudo simulation.

After taking these two alternatives back to our bridge and railroad engineers they have determined that neither option are feasible. The following is feedback we got from them:

“ The Westmoreland arch site design and construction relies on a concrete outlet invert to also serve as the structural design footing for the abutment walls (all toe design). Designed this way to limit the amount of bank excavation required behind the proposed abutments (which would be the heel portion in a cantilever abutment/footing design).

This concrete invert will carry all the loading/overturning for the abutments. Therefore, it will be heavily reinforced. Also, the flows through the arch are inlet controlled resulting in a high velocity across the outlet concrete invert.

Due to these above factors:

First option, removing invert top reinforcing to place stones in the invert (anchoring), and providing extra reinforcing around the stones, (reinforcing which is labor cost heavy), would also result in maybe a thicker concrete invert being placed to accommodate the stone layer, \$\$.

Second option, adding stone to the surface only (placing into wet concrete) to produce a “natural streambed”, unfortunately would be eroded away during high flows as it would be an insufficient anchoring method.

Both above options are heavy labor cost driven (gather correct size stone material, storage, placement etc)”

For these reasons explained above we are proposing to mitigate via an in lieu fee payment for the approximate 40LF of channel that will be impacted.

We anticipate this to equate to an ARM Payment being in the ballpark of \$10-11K.

We would like to get your concurrence acknowledging that it’s okay to submit our application proposing an ARM payment since the other alternatives have been evaluated and deemed not practicable.

Please let us know your thoughts,

Thank you,

Matt Urban

Urban, Matt

From: Benedict, Karl
Sent: Wednesday, January 29, 2020 3:55 PM
To: Urban, Matt; Large, Sarah
Subject: RE: Walpole, #41624A & Westmoreland, #41624 Railroad Culvert Rehabilitation Work - Wetlands Permitting

Thanks for the additional coordination. I had some initial discussion with Lori, but the photos were extremely helpful for conclusion. Responses to the items are included in purple below.

- 1) Verify no mitigation associated with construction of the walls because the area of impacts (TOB) have been previously disturbed by old structure and current rip/rap stabilization under emergency authorizations. Confirmed no mitigation associated with the walls. The wall impacts would be located within a previously impacted location
- 2) Verify if simulated material over a slab would be self-mitigating.
Confirmed, simulated material would be considered self-mitigating and should be sized appropriately to confirm stability under the proposed velocity condition.
- 3) Verify if boulders/cobbles embedded in concrete would also be considered a self-mitigating alternative if velocities show simulation will not stay in #2 above.
Confirmed, We can 'give it a try' to achieve this as a self-mitigating project There would be some monitoring requirement associated with the permit to ultimately confirm the condition.

Karl Benedict, Wetlands Specialist
Land Resources Management
Water Division, NH Department of Environmental Services
29 Hazen Drive, PO Box 95
Concord, NH 03302
Phone: (603) 271-4188
Fax: (603) 271-6588
Email: Karl.Benedict@des.nh.gov



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From: Urban, Matt <Matt.Urban@dot.nh.gov>
Sent: Wednesday, January 29, 2020 11:52 AM
To: Benedict, Karl <Karl.Benedict@des.nh.gov>; Large, Sarah <Sarah.Large@dot.nh.gov>
Subject: RE: Walpole, #41624A & Westmoreland, #41624 Railroad Culvert Rehabilitation Work - Wetlands Permitting

Hi Karl,

See attached photos.

Thanks,
Matt

From: Benedict, Karl <Karl.Benedict@des.nh.gov>

Sent: Wednesday, January 29, 2020 11:44 AM

To: Large, Sarah <Sarah.Large@dot.nh.gov>

Cc: Urban, Matt <Matt.Urban@dot.nh.gov>

Subject: RE: Walpole, #41624A & Westmoreland, #41624 Railroad Culvert Rehabilitation Work - Wetlands Permitting

Wondering if it would be possible to acquire the photograph that you had which indicated the existing condition and location of the downstream historic abutment. I have provided some initial discussion with Lori which is consistent with our meeting discussion, although comparison with that photograph would be helpful for final conclusion.

Thanks,

Karl Benedict, Wetlands Specialist
Land Resources Management
Water Division, NH Department of Environmental Services
29 Hazen Drive, PO Box 95
Concord, NH 03302
Phone: (603) 271-4188
Fax: (603) 271-6588
Email: Karl.Benedict@des.nh.gov



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[Like us on Facebook!](#)

We greatly appreciate your feedback, please take a moment to fill out our NHDES-LRM [customer satisfaction survey](#)

From: Large, Sarah <Sarah.Large@dot.nh.gov>

Sent: Wednesday, January 29, 2020 11:12 AM

To: Benedict, Karl <Karl.Benedict@des.nh.gov>

Cc: Urban, Matt <Matt.Urban@dot.nh.gov>

Subject: RE: Walpole, #41624A & Westmoreland, #41624 Railroad Culvert Rehabilitation Work - Wetlands Permitting

Happy Wednesday Karl,

I am reaching out to inquire if you have had an opportunity to touch base with Lori about the two subject projects that we met on last Friday?

More specifically the ideas and thoughts we came up with regarding Westmoreland. The goals and topics of discuss with Lori that we left that meeting with are:

- 1) Verify no mitigation associated with construction of the walls because the area of impacts (TOB) have been previously disturbed by old structure and current rip/rap stabilization under emergency authorizations.
- 2) Verify if simulated material over a slab would be self-mitigating.
- 3) Verify if boulders/cobbles embedded in concrete would also be considered a self-mitigating alternative if velocities show simulation will not stay in #2 above.

Warm regards,

Sarah Large
Wetlands Program Analyst
NH Department of Transportation

-----Original Appointment-----

From: Large, Sarah

Sent: Wednesday, January 15, 2020 3:01 PM

To: Sommer, Lori; Benedict, Karl

Cc: Urban, Matt; Dube, Melilotus

Subject: Walpole, #41624A & Westmoreland, #41624 Railroad Culvert Rehabilitation Work - Wetlands Permitting

When: Friday, January 24, 2020 11:00 AM-12:00 PM (UTC-05:00) Eastern Time (US & Canada).

Where: RES: DOT - 7 Hazen B16 161 Profile Conf Rm (10-12)

Good afternoon Karl and Lori,

NHDOT Wetlands Program, with directive from our Director of Operations, would like to meet with you both to discuss two projects involving culturally significant railroad stream crossings. These projects have come to past Natural Resource Agency meetings and efforts were picking up steam last year when the Department received Capitol Budget funding from the State. The project manager leading the charge retired and the project momentum lost steam. The initiative has picked back up due to the pending funding expiring and the Department would like to touch base with DES Wetlands Bureau of a plan and schedule for the wetlands permitting of this project.

Karl I was not able to see your outlook calendar so please indicate if this meeting date and time do not work for you and possibly recommend a time that works for both you and Lori.

Best wishes,

Sarah Large

Wetlands Program Analyst

NH Department of Transportation

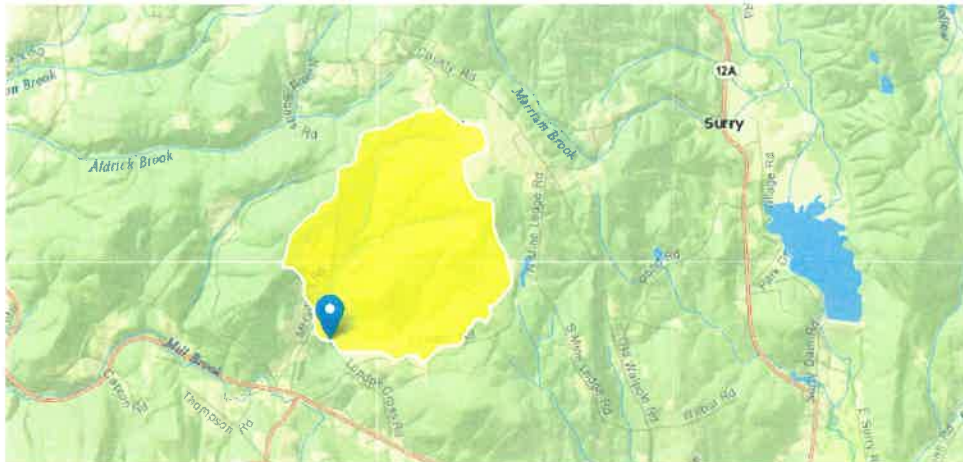
Bureau of Environment

**DES AQUATIC RESOURCE MITIGATION FUND
STREAM PAYMENT CALCULATION**

IMPACT on BOTH BANKS AND	Right Bank	0.00
	Left Bank	0.0000
	Channel	62.0000
	TOTAL IMPACT	62.0000
	Stream Impact Cost:	\$13,626.98
DES Administrative cost:		
		\$2,725.40
***** TOTAL ARM FUND STREAM PAYMENT*****		
		\$16,352.38

Westmoreland 41624: Cheshire RR over White Bridge Brook

Region ID: NH
Workspace ID: NH20200122155623370000
Clicked Point (Latitude, Longitude): 42.99611, -72.38501
Time: 2020-01-22 10:56:39 -0500



2.17 square miles = 1388.8 acres = Tier 3

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	2.17	square miles
CONIF	Percentage of land surface covered by coniferous forest	29.1343	percent
PREBC0103	Mean annual precipitation of basin centroid for January 1 to March 15 winter period	7.13	inches
BSLDEM30M	Mean basin slope computed from 30 m DEM	14.638	percent
MIXFOR	Percentage of land area covered by mixed deciduous and coniferous forest	32.8623	percent
PREG_03_05	Mean precipitation at gaging station location for March 16 to May 31 spring period	8.6	inches
TEMP	Mean Annual Temperature	44.684	degrees F
TEMP_06_10	Basinwide average temperature for June to October summer period	60.912	degrees F
PREG_06_10	Mean precipitation at gaging station location for June to October summer period	17.6	inches
ELEVMAX	Maximum basin elevation	1475.931	feet

Seasonal Flow Statistics Parameters^[Low Flow Statewide]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2.17	square miles	3.26	689
CONIF	Percent Coniferous Forest	29.1343	percent	3.07	56.2
PREBC0103	Jan to Mar Basin Centroid Precip	7.13	inches	5.79	15.1
BSLDEM30M	Mean Basin Slope from 30m DEM	14.638	percent	3.19	38.1
MIXFOR	Percent Mixed Forest	32.8623	percent	6.21	46.1
PREG_03_05	Mar to May Gage Precipitation	8.6	inches	6.83	11.5
TEMP	Mean Annual Temperature	44.684	degrees F	36	48.7
TEMP_06_10	Jun to Oct Mean Basinwide Temp	60.912	degrees F	52.9	64.4
PREG_06_10	Jun to Oct Gage Precipitation	17.6	inches	16.5	23.1
ELEVMAX	Maximum Basin Elevation	1475.931	feet	260	6290

Seasonal Flow Statistics Disclaimers^(Low Flow Statewide)

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Seasonal Flow Statistics Flow Report^(Low Flow Statewide)

Statistic	Value	Unit
Jan to Mar15 60 Percent Flow	1.11	ft ³ /s
Jan to Mar15 70 Percent Flow	0.926	ft ³ /s
Jan to Mar15 80 Percent Flow	0.814	ft ³ /s
Jan to Mar15 90 Percent Flow	0.622	ft ³ /s
Jan to Mar15 95 Percent Flow	0.497	ft ³ /s
Jan to Mar15 98 Percent Flow	0.421	ft ³ /s
Jan to Mar15 7 Day 2 Year Low Flow	0.839	ft ³ /s
Jan to Mar15 7 Day 10 Year Low Flow	0.454	ft ³ /s
Mar16 to May 60 Percent Flow	5.09	ft ³ /s
Mar16 to May 70 Percent Flow	3.97	ft ³ /s
Mar16 to May 80 Percent Flow	2.93	ft ³ /s
Mar16 to May 90 Percent Flow	2.02	ft ³ /s
Mar16 to May 95 Percent Flow	1.46	ft ³ /s
Mar16 to May 98 Percent Flow	1.03	ft ³ /s
Mar16 to May 7 Day 2 Year Low Flow	1.29	ft ³ /s
Mar16 to May 7 Day 10 Year Low Flow	0.69	ft ³ /s
Jun to Oct 60 Percent Flow	0.233	ft ³ /s
Jun to Oct 70 Percent Flow	0.165	ft ³ /s
Jun to Oct 80 Percent Flow	0.132	ft ³ /s
Jun to Oct 90 Percent Flow	0.0798	ft ³ /s
Jun to Oct 95 Percent Flow	0.0522	ft ³ /s
Jun to Oct 98 Percent Flow	0.0435	ft ³ /s
Jun to Oct 7 Day 2 Year Low Flow	0.092	ft ³ /s
Jun to Oct 7 Day 10 Year Low Flow	0.0284	ft ³ /s
Nov to Dec 60 Percent Flow	1.99	ft ³ /s
Nov to Dec 70 Percent Flow	1.49	ft ³ /s
Nov to Dec 80 Percent Flow	1.11	ft ³ /s
Nov to Dec 90 Percent Flow	0.697	ft ³ /s
Nov to Dec 95 Percent Flow	0.443	ft ³ /s
Nov to Dec 98 Percent Flow	0.269	ft ³ /s
Oct to Nov 7 Day 2 Year Low Flow	1.09	ft ³ /s
Oct to Nov 7 Day 10 Year Low Flow	0.428	ft ³ /s

Seasonal Flow Statistics Citations

Flynn, R.H. and Tasker, G.D., 2002, Development of Regression Equations to Estimate Flow Durations and Low-Flow-Frequency Statistics in New Hampshire Streams: U.S. Geological Survey Scientific Investigations Report 02-4298, 66 p. (<http://pubs.water.usgs.gov/wrir02-4298>)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

**NH Department of Transportation
Bureau of Rail and Transit / Bureau of Bridge Maintenance
Westmoreland, 41624
Env-Wt 904.09 Alternative Design
TECHNICAL REPORT**

Env-Wt 904.09(a) - If the applicant believes that installing the structure specified in the applicable rule is not practicable, the applicant may propose an alternative design in accordance with this section.

Please explain why the structure specified in the applicable rule is not practicable (Env-Wt 101.69 defines practicable as *available and capable of being done after taking into consideration costs, existing technology, and logistics in light of overall project purposes.*)

The proposed action is unable to meet the full extent of the stream crossing rules and attempting to do so is considered not practicable for the following reasons:

- 1) The site is considered a historical resource and the Division of Historical Resources has requested that the site be preserved/protected. As such, the demolition and re-construction of a crossing that meets the sizing requirements of the stream crossing rules is not feasible while also meeting the needs of DHR. .**
- 2) There are hydraulic concerns associated with increasing the size of the structure due to the potential downstream flooding effect it may have if the crossing were constructed with a larger opening.**
- 3) In order to construct and preserve the structure in its current state the Department is unable to feasibly construct and replicate a simulated stream bottom and therefore, mitigation is proposed for this impact.**

The proposed alternative meets the specific design criteria for Tier 2 and Tier 3 crossings to the maximum extent practicable, as specified below.

Env-Wt 904.05 Design Criteria for Tier 2 and Tier 3 Stream Crossings – New Tier 2 stream crossings, replacement Tier 2 crossings that do not meet the requirements of Env-Wt 904.07, and new and replacement Tier 3 crossings shall be designed and constructed:

(a) In accordance with the NH Stream Crossing Guidelines.

The proposed work has been designed to accommodate the stream crossing rules to the maximum extent practicable, while balancing the needs of the Division of Historical Resources. The proposed action will not disrupt AOP connectivity, it will not diminish the hydraulic capacity of the crossing and it will not result in upstream or downstream impacts/flooding to abutting property owners.

(b) With bed forms and streambed characteristics necessary to cause water depths and velocities within the crossing structure at a variety of flows to be comparable to those found in the natural channel upstream and downstream of the stream crossing.

The proposed work will not be able to simulate the streambed characteristics found in the natural upstream reach. The Department evaluated several alternatives proposals for how streambed simulation might be achieved such as:

1) The Department considered over excavating the streambed to install large sub-grade rip rap that would then be covered by approximately 1 to 2 feet simulated bed material. This alternative was not selected because of the concerns for further destabilizing the already compromised historic resource. In addition this alternative would have been the most challenging to construct from a constructability/time/and cost perspective with no guarantee that the simulated material would stay in place.

2) The second alternative considered consisted of a concrete bottom that would include strategic placement of various sized boulders and cobbles in an effort to mimic a stone bottom. This alternative was not chosen because of the added cost of constructability, and the concerns for getting a good concrete pour the free of cracks and voids that could reduce the longevity of the proposed fix.

3) The third and chosen alternative consists of a concrete bottom with no simulation proposed. The concrete bottom will still provide roughness and there is the possibility that material will accumulate naturally over time. This alternative is, the most cost effect, has the most ease for constructability, and will provide the best long term solution for stabilizing the existing historic resource without further jeopardizing the stability of the structure. This alternative is anticipated to require mitigation for impacts to the channel of the stream.

(c) To provide a vegetated bank on both sides of the watercourse to allow for wildlife passage.

The proposed work will include bank stabilization methods in the surrounding work area. The Department will be constructing concrete walls on the down stream side to hold back the embankments of the surrounding work zone where the failed portion of the structure once existed. In this area above the walls will be seeded and stabilized with humus and seed and possibly a few small shrubs. There is no work proposed on the inlet side and the natural banks will be left intact.

(d) To preserve the natural alignment and gradient of the stream channel, so as to accommodate natural flow regimes and the functioning of the natural floodplain.

The proposed work is not going to alter the existing connectivity, alignment, or gradient of the stream channel. The proposed work will be tying into the existing structure. The work as proposed will not create a perch. The proposed work will not alter the existing flow regime and will not result in any upstream or downstream flooding as determined by the hydraulic calculations that can be found elsewhere in this application.

(e) To accommodate the 100-year frequency flood, to ensure that (1) there is no increase in flood stages on abutting properties; and (2) flow and sediment transport characteristics will not be affected in a manner which could adversely affect channel stability.

The proposed work will accommodate the 100-year flood. There will be no increase to flood stages as a result of the proposed work. Flow and sediment transport characteristics will not be affected by the proposed work as evidenced by the hydraulic calculations provided elsewhere in this application.

(f) To simulate a natural stream channel.

Please see response to (b) abover for an explanation of why the Department was unable to provided a simulated natural stream bed.

(g) So as not to alter sediment transport competence.

The proposed work will not alter the sediment transport competence of the structure as evidenced by the hydraulic calculations provided elsewhere in this application package.

Env-Wt 904.09(c)(3) – The alternative design must meet the general design criteria specified in Env-Wt 904.01:

Env-Wt 904.01

(a) Not be a barrier to sediment transport;

The proposed work will not be a barrier to sediment transport as evidenced by the hydraulic calculation provided elsewhere in the application.

(b) Prevent the restriction of high flows and maintain existing low flows;

The proposed work will not prevent the restriction of high flows and it will maintain the existing low flows as evidenced by the hydraulic calculations provided elsewhere in the application.

(c) Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction;

The proposed work will not substantially disrupt the movement of aquatic life beyond the duration of construction. It's anticipated that the concrete bottom will not significantly alter the velocity through the construction because of the concrete's roughness co-efficient. The proposed bottom will not create a barrier such as a perch. While this project is not improving AOP we know it will not diminish AOP as a result of the proposed work.

(d) Not cause an increase in the frequency of flooding or overtopping of banks;

The proposed work will not increase the frequency of flooding or overtopping of banks as evidenced by the hydraulic calculations provided elsewhere in the application.

(e) Preserve watercourse connectivity where it currently exists;

The proposed work will not be moving the surface water from one watershed to another and will not be disrupting connectivity where it currently exists.

(f) Restore watercourse connectivity where: (1) Connectivity previously was disrupted as a result of human activity(ies); and (2) Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both;

The Department is proposing an alternative that protects a historical resource. For that reason this project may be unable to fully restore the stream to a natural state. However, the Department is confident that we are not diminishing connectivity for AOP upstream or downstream of the crossing.

(g) Not cause erosion, aggradation, or scouring upstream or downstream of the crossing; and

Based on the hydraulic calculations provided elsewhere in the application the proposed work will not result in erosion, aggradation or scour upstream or downstream of the crossing. Additionally, the Department will be implementing proper BMP's during and throughout construction until the site is fully stabilized.

(h) Not cause water quality degradation.

The Department will be implementing proper BMP's during and throughout construction until the site is fully stabilized to ensure there is no water quality degradation.

*****Note: An alternative design for Tier 1 stream crossings must meet the general design criteria (Env-Wt 904.01) only to the *maximum extent practicable*.**



PROJECT Westmoreland
PROJECT NO. 41624
CALCULATED BY TMB
CHECKED BY _____
SUBJECT Stream Crossing

BRIDGE MP
ROUTE Cheshire Branch
DATE _____
DATE _____
SHEET 1 OF 2

Westmoreland 100.36 Rec Trail (formally RR) over White Bridge Brook

Tier 3 Stream Crossing

Existing Conditions: **Drainage Area** 2.17 sq miles from Streamstats

Existing Culvert	14'-10" split stone arch	Upstream Inv	498.88
	Length (ft) 132.25	Downstream Inv	498.21
	Slope 0.500%	Manning's n - 0.015 (existing invert is concrete)	

General:

Existing structure is a partially collapsed stone arch that carries a recreation trail over White Bridge Brook. Structure formally carried the railroad track, it is now known as the Cheshire Branch, considered a historic structure. Existing structure consists of 145'-10" of arch that was once 178'-3" long. 132'-3" contains a concrete floor. Portions of the arch have collapsed due to undermining that occurred at the outlet and proceeded into the arch over several storms. Debris from the collapsed arch created localized increases in velocity causing more damage to the structure. A gravel stream bed exists beyond the concrete floor through the partial wings that stand at what was the outlet. The site has been modified extensively to remove collapsed portions of the arch and remove trees and gravel from the outlet slope. There is no observed damage to the inlet or header. Elevations, lengths and station information are from survey done by NHDOT ROW survey crew. There is about 40' of fill over the top of the arch to the existing trail surface.

Inlet Conditions:

The arch is 14'-10" wide and 11'-4" tall at its tallest (first 4'-5" of the sides are vertical before the arch starts). Unnamed stream has migrated around a vegetated bar at the inlet, splitting flow in two just upstream of inlet. Header and wings at the inlet are made from cut stone. The concrete floor was added in 2009 to stabilize the portions of the arch that had not collapsed. Elevation of concrete invert is 498.88', this is at the entrance to the arch.

Outlet conditions:

The concrete floor ends within the arch and was placed as close to the damaged portion as practical. The stream bed is gravel with large cobbles and small boulders beyond the concrete floor. The stream is almost level from the concrete floor to the existing portions of the outlet wings. Beyond the wings the stream bed drops off rapidly downstream. The entire stream bed and side slopes at the outlet have been disturbed by clean up activity and rip rap placement.

Design Flow:

Streamstats Q100 = 510 cfs, based on the 2.17 sq mi drainage area.

Hydraulic capacity:

Hydraulic analysis is from FHWA's HY-8 culvert analysis program. Q100 Headwater elevation is 504.49, 5.6' above the inlet invert elevation. The existing structure was modeled as the portion of the arch with the concrete floor, 132'-3" of length. Structure is inlet controlled, the area does not overtop at the Q100 flow. At the end of the concrete floor the model shows an outlet depth of 3'-4" with velocity of 11.85 ft/s. If modeled as the entire outlet length (176'-3") with gravel stream bed, the Q100 velocity is 10.19 ft/s. It appears that debris in the stream due to storm damage from unchecked tree blow down and undermining is responsible for a lot of the damage observed as the flow and velocity from modeling is not unusually high.



PROJECT Westmoreland
PROJECT NO. 41624
CALCULATED BY TMB
CHECKED BY _____
SUBJECT Stream Crossing

BRIDGE MP
ROUTE Cheshire Branch
DATE _____
DATE _____
SHEET 1 OF 2

Westmoreland 100.36 Stream

Tier 3 Stream Crossing

Proposed Design: **Drainage Area** Same as existing

The proposed project will install a concrete floor out to the remaining outlet wing walls and install concrete walls where the arch previously existed. These walls will connect the remaining arch to the wing walls.

The remaining arc will be stabilized and remain with a small concrete header cast.

The existing split stone wings at the outlet will be retained.

Rip rap will be installed in front of the outlet wings connecting the concrete floor to the existing stream bed.

This rip rap will also slow the water velocity existing the structure.

The slope of the existing concrete floor will be maintained through the remaining structure to the outlet wings.

The side slopes at the new concrete walls and above the proposed header will be rebuilt and biodegradable matting installed with grass seed to stabilize them.

No work is proposed at the inlet end.

The project will stabilize the remaining arch so that stream flow will not become blocked by trees or other debris

Design Flow:

No change to Design Flow as a result of the project. **Q100 = 510 cfs**

Hydraulic capacity:

Hydraulic analysis is from FHWA's HY-8 culvert analysis program.

The proposed was modeled as a 176'-3" concrete structure with concrete walls and floor.

Q100 Headwater elevation is 504.47' (virtually unchanged from existing condition).

Q100 outlet velocity 13.47 ft/s. The tail water velocity in the downstream channel is 6.95 ft/s based on this model.

The existing structure slightly meters water flowing downstream during high flow events.

Alternatives:

Based on modelled flows the structure itself is not causing damage to the downstream system.

The structure is considered historic by the State of New Hampshire.

The preferred alternative is to repair and stabilize the structure to prevent further collapse of the arch and adjacent slope fill material.

Replacement in-kind or with a larger structure are not considered to be practicable alternatives at this time.



New Hampshire Natural Heritage Bureau

To: Melilotus Dube
7 Hazen Drive
Concord, NH 03301

Date: 1/22/2020

From: NH Natural Heritage Bureau

Re: Review by NH Natural Heritage Bureau of request dated 1/22/2020
NHB File ID: NHB20-0233

Applicant: Melilotus Dube

Location: Tax Map(s)/Lot(s):
Westmoreland

Project Description: NHDOT Westmoreland 41624. Previously NHB18-1105. The proposed project will repair and stabilize structural damage to the stone arch culvert carrying White Bridge Brook under the Cheshire Branch Railroad. Extensive emergency repair efforts have previously occurred at this crossing. Currently proposed work involves installing new headwall and wingwalls, new concrete slab and concrete side walls connecting the existing end of the culvert with remaining historic wingwalls downstream and a concrete pad between the wingwalls remnants. Access will be limited to previously established access areas.

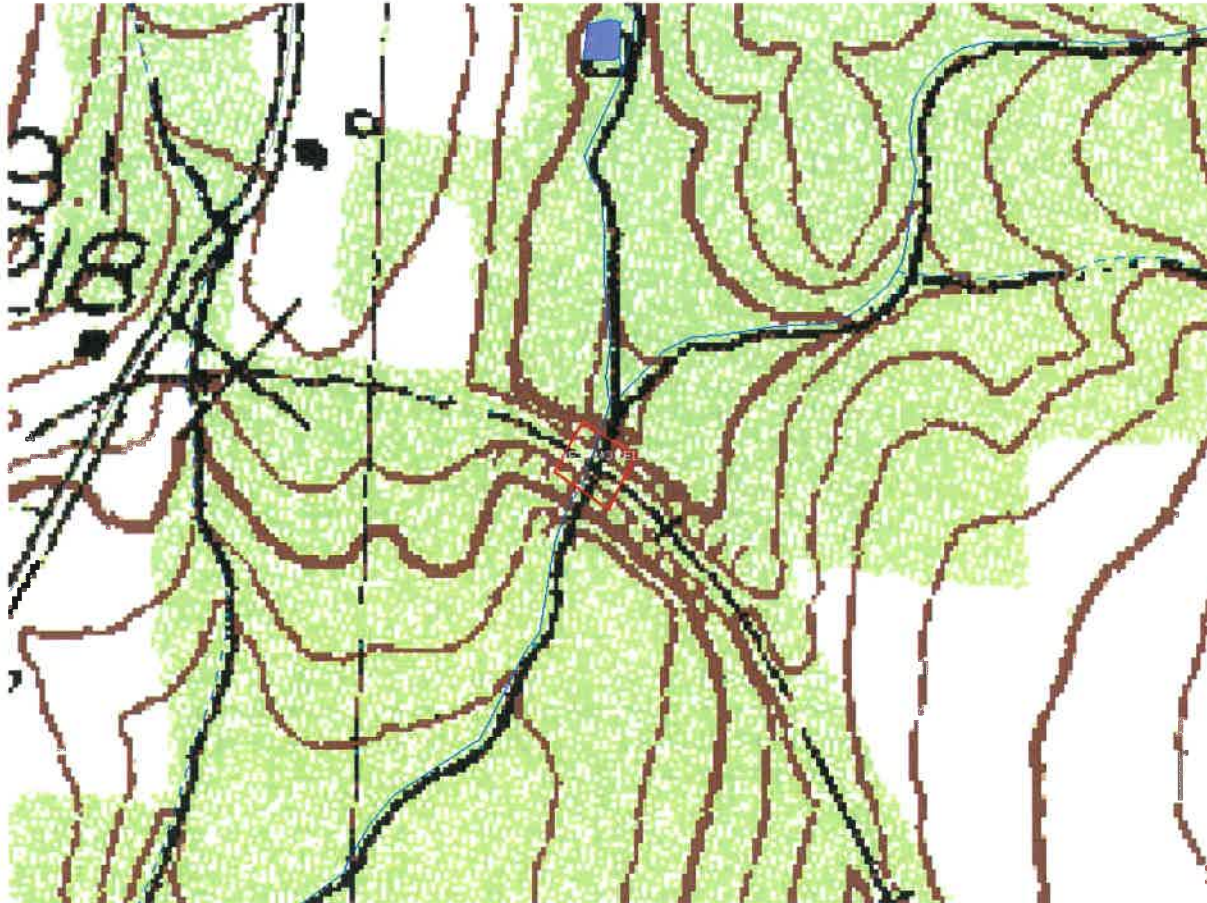
The NH Natural Heritage database has been checked for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government. We currently have no recorded occurrences for sensitive species near this project area.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

This report is valid through 1/21/2021.



MAP OF PROJECT BOUNDARIES FOR NHB FILE ID: NHB20-0233





United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
<http://www.fws.gov/newengland>



In Reply Refer To:

January 24, 2020

Consultation Code: 05E1NE00-2018-SLI-1526

Event Code: 05E1NE00-2020-E-03142

Project Name: Westmoreland 41624

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2018-SLI-1526

Event Code: 05E1NE00-2020-E-03142

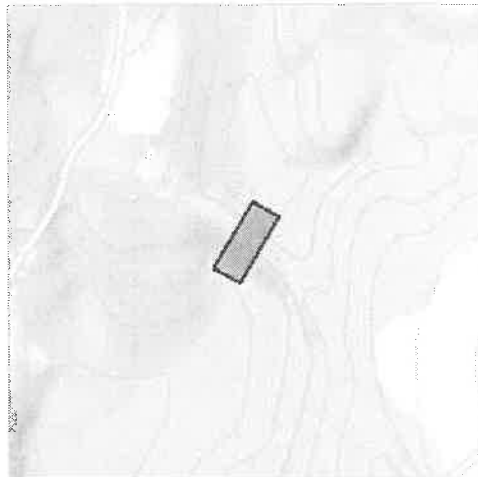
Project Name: Westmoreland 41624

Project Type: TRANSPORTATION

Project Description: Repair/rehabilitation of deteriorated stone arch culvert carrying White Bridge Brook under the Cheshire Branch Rail Road 0.25 miles south of Gilboa Road.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/42.99595876596321N72.3849364978844W>



Counties: Cheshire, NH

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
<http://www.fws.gov/newengland>



IPaC Record Locator: 550-19984195

January 27, 2020

Subject: Consistency letter for the 'Westmoreland 41624' project indicating that any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Dear Melilotus Dube:

The U.S. Fish and Wildlife Service (Service) received on January 27, 2020 your effects determination for the 'Westmoreland 41624' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. You indicated that no Federal agencies are involved in funding or authorizing this Action. This IPaC key assists users in determining whether a non-Federal action may cause "take"^[1] of the northern long-eared bat that is prohibited under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Please report to our office any changes to the information about the Action that you entered into IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation.

If your Action proceeds as described and no additional information about the Action's effects on species protected under the ESA becomes available, no further coordination with the Service is required with respect to the northern long-eared bat.

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description

You provided to IPaC the following name and description for the subject Action.

1. Name

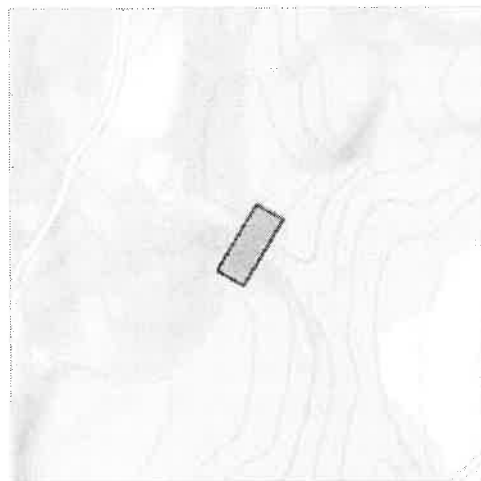
Westmoreland 41624

2. Description

The following description was provided for the project 'Westmoreland 41624':

Repair/rehabilitation of deteriorated stone arch culvert carrying White Bridge Brook under the Cheshire Branch Rail Road 0.25 miles south of Gilboa Road.

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/42.99595876596321N72.3849364978844W>

**Determination Key Result**

This non-Federal Action may affect the northern long-eared bat; however, any take of this species that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o).

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on **May 15, 2017**. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for non-Federal actions is to assist determinations as to whether proposed actions are excepted from take prohibitions under the northern long-eared bat 4(d) rule.

If a non-Federal action may cause prohibited take of northern long-eared bats or other ESA-listed animal species, we recommend that you coordinate with the Service.

Determination Key Result

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

No

2. Will your activity purposefully **Take** northern long-eared bats?

No

3. Is the project action area located wholly outside the White-nose Syndrome Zone?

Automatically answered

No

4. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

Yes

5. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

No

6. Will the action involve Tree Removal?

No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

0

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0



Victoria F. Sheehan
Commissioner

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION



William Cass, P.E.
Assistant Commissioner

Westmoreland
41624

RPR 145m
Phase 2 Repairs

Adverse Effect Memo

Pursuant to meetings and discussions on December 17, 2003; January 7, 2010; February 11, 2010; March 11, 2010; April 21, 2010; July 14, 2011; April 18, 2019; May 10, 2018; and February 13, 2020 and for the purpose of compliance with regulations of the National Historic Preservation Act, as amended, and the Advisory Council on Historic Preservation's *Procedures for the Protection of Historic Properties* (36 CFR 800), the NH Department of Transportation (NHDOT) and the NH Division of Historical Resources (NHDHR) have coordinated the identification and evaluation of historic and archeological properties with plans to repair and stabilize the East Westmoreland Stone Arch Culvert carrying the Cheshire Railroad over White Bridge (aka Mill) Brook in Westmoreland, New Hampshire.

Project Description:

The East Westmoreland Stone Arch Culvert (mile marker 100.5) carrying the Cheshire Railroad over White Bridge (aka Mill) Brook in Westmoreland, New Hampshire has undergone several emergency repairs and the lack of maintenance of stone culverts along the Cheshire Branch Railroad has been discussed at several Cultural Resources Agency Coordination meetings. Former projects included Westmoreland 66017S (Phase 1 repairs) in 2011, and Westmoreland 66021 in 2003 and 2011.

During former project reviews, the East Westmoreland Stone Arch Culvert was determined individually eligible for the National Register of Historic Places (National Register) and also eligible as a contributing element of the potentially eligible Cheshire Railroad (NHDHR Determination of Eligibility sheet dated October 8, 2008).

The finding was associated with the Phase I project (#66017S updated: July 15, 2011) for the Westmoreland Cheshire Branch Railroad Stone Arch Culvert at Mile Marker 100.6. Project review resulted in a determination that there would be an Adverse Effect to the East Westmoreland Stone Arch Culvert, documented in an adverse effect memo dated August 24, 2011. Phase I was the initial stage for treatment of the collapsed outer headwall and hole toward the upstream side of the center of the culvert. Phase I actions for the damaged culvert involved the removal of fill from inside the structure and from over the damaged downstream end of the stone culvert to achieve stabilization and avert further soil sloughing; placement of additional fill in a nearby railroad cut or along the railroad corridor to create access to the base of the culvert; and construction of a concrete toe wall along portions of the interior walls to stabilize them. These steps were determined necessary to lessen the potential enlargement of the weakened opening and continued collapse of the outer end; to prevent potential flooding caused by blockage of the culvert with fill and vegetation; and to enable inspection of the culvert to more precisely plan its subsequent Phase 2 permanent repair. In 2013, storm damage resulted in additional deterioration

and erosion and several emergency authorizations resulted in ledge, granite block and gravel material removal from the downstream brook; and riprap placement on side slopes for stabilization, until the final header construction and slope stabilization work are performed. No Memorandum of Agreement was compiled for Phase I of the project. Phase 2 was contingent upon the availability of funds.

Following an award of Capital Funding, Phase 2 proposes to complete stabilization and preservation of the historic culvert. Multiple alternatives and elements of the proposed project were evaluated and impacts to the following properties within the APE were considered:

- East Westmoreland Stone Arch Culvert (WES0006) - determined eligible (individual inventory form)
- Cheshire Railroad (ZMT-OCRR) – assumed eligible (project area form).

NHDOT evaluated several potential alternatives. A list of alternatives considered and the potential environmental impacts and costs associated with each alternatives was discussed at the May 10, 2018 Cultural Resource Agency Meeting. The preferred alternative is the only reasonable alternative that is achievable given the budgetary and constructability constraints associated with this culvert. Additionally, while this alternative does add new features to the outlet of the crossing, it is the only alternative considered that preserves all of the remaining original components of the stone arch culvert.

The preferred alternative is to install a 2' thick x 15' wide x 45' long concrete slab extending from the existing slab to the wing wall remnants downstream with 16" thick x 8' high x 45' long concrete walls on either side connecting to and supporting the remaining stone arch blocks and the wing wall remnants. The work will also install a new headwall around the existing outlet location and place a 33' wide x 14' long stone apron to fill the area between the wing wall remnants in order to prevent further undermining due to backwatering. Finally, fabric and riprap will be installed around the headwall and along the exterior of the new walls to prevent erosion of the banks during overtopping flood events, which is anticipated during the kinds of large storm events which have previously caused damage to the culvert.

NHDOT Bridge Maintenance feels that the most cost effective solution and best engineering remedy for the downstream drainage issues and concerns would be to maintain the arch in place, construct a concrete header on the remaining portion of the outlet end and complete restoration of the site. In addition to being the least costly option for dealing with the issue, the drainage engineers determined that the arch also acted as a metering culvert retaining heavy flow from upstream during large storms that could cause more downstream flooding if the arch was not partially restricting and metering the flow. This proactive effort represents the least intrusive solution to stabilize the arch for the following reasons:

- It minimizes work on the arch and on the rail corridor because it limits the work area to the outlet of the arch and adjacent slope,
- It retains remaining portions of the arch and provides a permanent stable engineered solution that stops further collapse of the arch, and
- It proposes to retain the remaining two granite wing sweeps that designate the end of the original arch.

The Area of Potential Effects (APE) is irregular in shape and encompasses the Cheshire Railroad bed from the crossing at Mt. Gilboa Road to the west of the project area and extending easterly to the project area at the stone arch culvert carrying White Bridge (Mill) Brook under the Cheshire Railroad, including an area extending approximately 75 from the existing outlet and 50 from the existing inlet, as well as the existing access roads that were constructed in the northwest and southwest quadrants of the crossing for previous emergency repair efforts. The Railroad bed from Mt. Gilboa Road and the existing access roads are included to accommodate access to the site. The area at the inlet is included in the APE to accommodate installation of a clean-water bypass structure to enable the work in the culvert to be done in dry stream bed conditions. The area at the outlet is to allow the proposed stabilization work and installation of Best Management Practices to maintain water quality during construction.

Identification:

Above-Ground Resources

On January 29, 2020, a Request for Project Review (RPR) was submitted to NHDHR for the Westmoreland 41624 project (Phase 2) with plans to repair and stabilize the East Westmoreland Stone Arch Culvert in Westmoreland, New Hampshire.

It is noted that the following properties within the APE were inventoried and evaluated during the initial Section 106 consultation process. The APE has not changed and there are no additional resources located within the APE.

An Individual Inventory Form for the East Westmoreland Stone Arch Culvert (WES0006) was completed in July 2008. The culvert was determined individually eligible for the National Register of Historic Places (National Register) and also eligible as a contributing element of the potentially eligible Cheshire Railroad under A & C “as an important link in the transportation system of the Cheshire Railroad as well as the work of an engineering master” (NHDHR Determination of Eligibility sheet dated October 8, 2008). The Determination of Eligibility assessment of the culvert concluded that:

The East Westmoreland Stone Arch Culvert, constructed c.1848, is one of the many impressive engineering structures on the line of the former Cheshire Railroad. The Cheshire Railroad surpassed all other rail lines in New Hampshire in its mastery of masonry construction and in the bold use of the stone arch for its many stream crossings. The East Westmoreland Stone Arch Culvert was likely constructed under the supervision of chief engineers Lucian Tilton and W.S. Whitwell. ...Although damaged on the downstream wall by flooding, the arch culvert retains integrity of location, design, setting, materials, workmanship, feeling and association.

A Project Area Form was completed in 1996 for the Cheshire Railroad (ZMT-OCRR). The Determination of Eligibility assessment of the rail line concluded that this railroad line is assumed eligible under A and C as a district:

The Cheshire Railroad is one of the ‘most thoroughly-constructed lines in the country.’ Its 7 stone arch bridges, 13 large box culverts, 120 smaller stone box culverts, 4 double box culverts and 4 granite block cattle underpasses of local granite have considerable historic and engineering significance which may make the line or these elements of the line eligible under Criteria A and C.

To make a final determination, however, it would need to be evaluated against others, and, at this time we have produced a sufficient context to evaluate the Cheshire Line for National Register Eligibility.

Inventory and National Register forms are on file at NHDHR offices in Concord, NH, and online through the NHDHR Enhanced Mapping and Management Information Tool (EMMIT), available at <https://emmit.dncr.nh.gov>.

Archaeological Sites

The January 30th, 2020 NHDHR response to the RPR indicated that there were no archaeological concerns.

Public Consultation:

Town officials have been contacted regarding the project to gather information about the project area and to inform them of the proposed work. No responses have been received to date.

Determination of Effect:

The East Westmoreland Stone Arch Culvert carrying Cheshire Railroad over White Bridge Brook (WES0006)

The East Westmoreland Stone Arch Culvert is significant under Criterion A & C “as an important link in the transportation system of the Cheshire Railroad as well as the work of an engineering master.”

In the NHDHR response to the Phase 2 project RPR (1/30/2010), it was noted that the stabilization of the stone culvert was encouraged as soon as possible to avoid additional deterioration.

Applying the criteria of effect at 36 CFR 800.5(a)(2), we have determined that Phase 2 will result in an Adverse Effect to the individually eligible East Westmoreland Stone Arch Culvert and to the assumed eligible Cheshire Railroad district. The proposed alternatives however minimize adverse effects to the structure.

The Adverse Effect includes physical destruction of all or part of the resource. While Phase 2 does not plan to include additional destruction of the stone arch, Phase 1 did include the removal of stone to stabilize the arch. There may be additional removal of select stones as Bridge Maintenance crews work to stabilize, however those will not be known until work starts. Project commitments include to reuse stone where possible and to avoid additional removal of stones. This applies to both the individual stone arch and the Cheshire Railroad.

There is also an adverse effect from alteration of the property, including but not limited to rehabilitation and/or stabilization of the resource. The individual culvert will be impacted by the alterations to stabilize the culvert. The addition of concrete wingwalls and stabilizing the outlet and outlet wingwalls will alter the resource. The Cheshire Railroad will not be adversely impacted under this Criteria of

Effect. The continuity of the rail line will not be impacted and the stone arch that currently serves to move water will be retained.

Lastly, there will be an adverse effect from the change in character of the property use or physical features within the property's setting that contributes to its historic significance. The individual culvert will be affected because it will no longer stand alone as a stone arch culvert; new materials have and will be added to preserve what is existing. For the Cheshire Railroad the line will be impacted but the loss of a portion of the stone arch. Because the Cheshire Railroad is known for its stone arches and excellent stone masonry, the loss of portions of this arch affect the rail line's continuity and history.

Minimization efforts have occurred by retaining as much of the arch as possible. Sadly the additional storm events have continued to impact the arch, however, by adding the subfloor, footings and saving as much of the granite wing sweeps as possible, NHDOT is able to preserve as much of the arch as possible.

Archaeology

As noted above, the January 30th, 2020 NHDHR response to the RPR indicated that there were no archaeological concerns.

The result of identification and evaluation for the proposed 41624 Contract is a finding of *Adverse Effect*.

Mitigation Measures:

Appropriate mitigation will be determined in consultation with NHDHR, and if interested, the Town of Westmoreland and any consulting parties. Mitigation will be recorded in a Memorandum of Agreement.

Initial mitigation ideas are to inventory the remaining stone arch culverts on the Cheshire Railroad and determine what, if any, steps need to be taken to maintain their existing conditions. An engineer will assess the stone arch culverts make recommendations for their continued preservation. Timing, reporting needs and action plans will be recorded in the MOA.

Section 4(f) (to be completed by FHWA)	There Will Be:	<input type="checkbox"/> No 4(f);	<input type="checkbox"/> Programmatic 4(f);	<input type="checkbox"/> Full 4 (f); <u>or</u>
	<input type="checkbox"/> A finding of <i>de minimis</i> 4(f) impact as stated: In addition, with NHDHR concurrence of no adverse effect for the above undertaking, and in accordance with 23 CFR 774.3, FHWA intends to, and by signature below, does make a finding of <i>de minimis</i> impact. NHDHR's signature represents concurrence with both the no adverse effect determination and the <i>de minimis</i> findings. Parties to the Section 106 process have been consulted and their concerns have been taken into account. Therefore, the requirements of Section 4(f) have been satisfied.			

In accordance with the Advisory Council's regulations, consultation will continue, as appropriate, as this project proceeds.

 Jill Edelmann Cultural Resources Manager	3/20/2020 Date
--	-------------------

Cultural Resources Manager

Concurred with by the NH State Historic Preservation Officer:

 3/26/2020
Nadine Miller Date

Deputy State Historic Preservation Officer
NH Division of Historical Resources

cc: Brian Lombard, NHDOT Meli Dube, NHDOT
Laura Black, NHDHR David Trubey, NHDHR Marika Labash, NHDHR
Mike Hicks, ACOE Rick Kristoff, ACOE

s:\environment\projects\westmoreland\41624\cultural resources\westmoreland 41624 adverse_effect_memo_3.11.2020.docx

Please mail 2 copies of the completed form and required material to:

Cultural Resources Staff
Bureau of Environment
NH Department of Transportation
7 Hazen Drive
Concord, NH 03302

DHR Use Only

R&C # _____

Log In Date ____ / ____ / ____

Response Date ____ / ____ / ____

Sent Date ____ / ____ / ____

Request for Project Review by the New Hampshire Division of Historical Resources for Transportation Projects

- ☐ This is a new submittal.
☒ This is additional information relating to DHR Review and Compliance (R&C)#: 145

GENERAL PROJECT INFORMATION

DOT Project Name & Number Westmoreland 41624

Brief Descriptive Project Title Repair Stone Arch Culvert Carrying Cheshire Railroad over White Bridge Brook

Project Location Cheshire Railroad over White Bridge Brook north of NH Route 12

City/Town East Westmoreland

Lead Federal Agency and Contact (*if applicable*) USACOE
(*Agency providing funds, licenses, or permits*)

Permit Type and Permit or Job Reference #

DOT Environmental Manager (*if applicable*) Meli Dube

PROJECT SPONSOR INFORMATION

Project Sponsor Name

Mailing Address Phone Number

City State Zip Email

CONTACT PERSON TO RECEIVE RESPONSE

Name/Company Meli Dube, NHDOT Bureau of Environment

Mailing Address 7 Hazen Drive Phone Number -2711612

City Concord State NH Zip 03302 Email Melilotus.Dube@dot.nh.gov

This form is updated periodically. Please download the current form at <http://www.nh.gov/nhdhr/review>. Please refer to the Request for Project Review for Transportation Projects Instructions for direction on completing this form. Submit 2 copies of this project review form for each project for which review is requested. Include 1 self-addressed stamped envelope to expedite review response. Project submissions will not be accepted via facsimile or e-mail. This form is required. Review request form must be complete for review to begin. Incomplete forms will be sent back to the applicant without comment. Please be aware that this form may only initiate consultation. For some projects, additional information will be needed to complete the Section 106 review. All items and supporting documentation submitted with a review request, including photographs and publications, will be retained by the DOT and the DHR as part of its review records. Items to be kept confidential should be clearly identified. For questions regarding the DHR review process and the DHR's role in it, please visit our website at: <http://www.nh.gov/nhdhr/review> or contact the R&C Specialist at Marika.Labash@dnr.nh.gov or 603.271.3558.

PROJECTS CANNOT BE PROCESSED WITHOUT THIS INFORMATION

Project Boundaries and Description

- ☒ Attach the Project Mapping *indicating the proposed area of potential effects (APE)*. (See RPR for Transportation Projects Instructions and R&C FAQs for guidance. Note that the APE is subject to approval by lead federal agency and SHPO.)
- ☒ Attach a detailed narrative description of the proposed project.
- ☒ Attach current engineering plans with tax parcel, landscape, and building references, and areas of proposed excavation, if available.
- ☒ Attach photos of the project area/APE with mapped photo key (overview of project location and area adjacent to project location, and specific areas of proposed impacts and disturbances.) (Blank photo logs are available on the DHR website. Informative photo captions can be used in place of a photo log.)
- ☒ A DHR records search must be conducted to identify properties within or adjacent to the APE. Provide records search results via EMMIT or in Table 1. (Blank table forms are available on the DHR website.) EMMIT or in-house records search conducted on 12/31/2019.*

**The DHR recommends that all survey/National Register nomination forms and their Determination of Eligibility (green) sheets are downloaded or copied for your use in project development.*

Architecture

Are there any buildings, structures (bridges, walls, culverts, etc.) objects, districts or landscapes within the APE? ☒ Yes ☐ No

If no, skip to Archaeology section. If yes, submit all of the following information:

- ☒ Attach completed Table 2.
- ☒ Photographs of *each* resource or streetscape located within the APE. Add to the mapped photo key and photo log noted above. (Digital photographs are accepted. All photographs must be clear, crisp and focused.)
- ☒ Copies of National Register boundary (listed or eligible) mapping, and add National Register boundaries for listed and eligible properties to project mapping/engineering plans (if applicable).

Archaeology

Does the proposed undertaking involve ground-disturbing activity? ☒ Yes ☐ No

If yes, submit all of the following information:

- ☒ Description of current and previous land use and disturbances.
- ☒ Available information concerning known or suspected archaeological resources within the project area (such as cellar holes, wells, foundations, dams, etc.)

Please note that for many projects an architectural and/or archaeological survey or other additional information may be needed to complete the Section 106 process.

AGENCY COMMENT

This Space for DOT and Division of Historical Resources Use Only

Sent to DHR; Authorized DOT Signature: _____

Date: _____

☐ Insufficient information to initiate review.

☐ Additional information is needed in order to complete review.

Comments: _____

If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation.

Authorized DHR Signature: _____

Date: _____

NHDOT Westmoreland 41624
NHDHR Review and Compliance #145
RPR Update Detailed Discussion

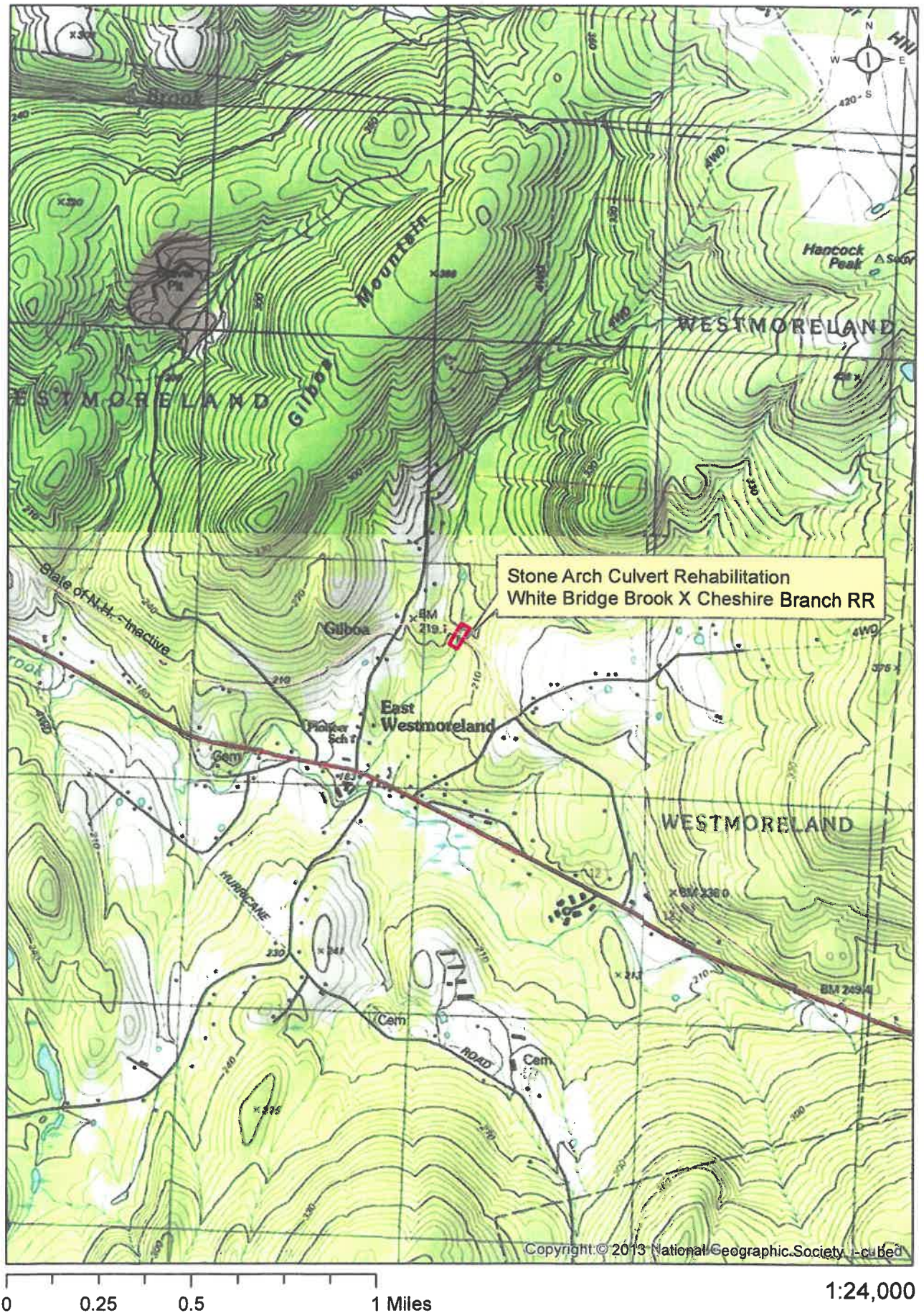
The proposed project is part of an on-going effort to repair and stabilize a stone arch culvert carrying the abandoned Cheshire Railroad over White Bridge Brook (previously reviewed as Mill Brook) in East Westmoreland at railroad mile marker 100.06. The culvert was constructed c. 1848 as part of the construction of the Cheshire Railroad, which included numerous large stone arch culverts, bridges and cattle passes. While most of the railroad and associated buildings have been demolished or are deteriorated, many of the stone structures are still intact in good condition and are excellent example of superior railroad architecture, engineering and craftsmanship from the 1800s. The East Westmoreland stone arch culvert was originally constructed to be 176' from spandrel wall to spandrel wall with 9' wingwalls at the inlet and 13' wingwalls at the outlet with a maximum width of 14'6" and a maximum height of 13' at the outlet. Significant damage occurred to the culvert due to multiple large storm events in 2005, which caused undermining and collapse of original outlet. Since that time, multiple large storm events have continued to cause damage and various repair and stabilization efforts have occurred, see attached Summary of Activity. In the current condition, approximately 41' of the outlet has collapsed, however, remnants of the original wingwalls remain. Toe walls and a concrete slab have been installed inside the culvert, however, significant undermining is still occurring and there is a high risk for continued collapse of the stones comprising the side walls of the culvert. Additionally, the positioning of the wingwall remnants create a backwatering effects during high flow events which continuously undermines the wingwalls and may lead to eventually collapse. Trees surrounding the culvert have been removed to prevent destabilization caused by the root systems and the railroad embankment fill has been removed and pulled back over the culver to the existing outlet location, which required the centerline of the railroad trail to shifted 24' to the north and lowered 12' from the original elevation in the area of the culvert. Large stone blocks have been continuously removed from the stream as the culvert has gradually collapsed, and significant stone armoring has been placed on the banks in order to stabilize the stream during high flow conditions.

The previous work described above was previously reviewed by NHDHR and was determined to have an adverse effect on the culvert, which has been determined to be eligible for listing on the National Register of Historic Places individually and as part of a district associated with the Cheshire Railroad under Criterion A and C. At that time, it was determined that the previous work would be considered Phase 1 to repair the existing damage and that Phase 2 would continue the stabilization efforts to avoid future damage once funding became available. The proposed work is considered Phase 2 of the work efforts at this culvert. This project proposes to install a 2' thick x 15' wide x 45' long concrete slab extending from the existing slab to the wingwall remnants downstream with 16" thick x 8' high x 45' long concrete walls on either side connecting to and supporting the remaining stone arch blocks and the wingwall remnants. The work will also install a new headwall around the existing outlet location and pour an additional 8" thick x 33' wide x 14' long concrete slab apron to fill the area between the wingwall remnants in order to prevent further undermining due to backwatering. Finally, fabric and riprap will be installed around the headwall and along the exterior of the new walls to prevent erosion of the banks during overtopping flood events, which is anticipated during the kinds of

January 3, 2020

large storm events which have previously caused damage to the culvert. A list of alternatives considered and the potential environmental impacts and costs associated with each alternatives is included elsewhere in this package for reference. The alternative described above was discussed at the May 10, 2018 Cultural Resource Agency Meeting and is the only alternative that is achievable given the budgetary and constructability constraints associated with this culvert. Additionally, while this alternative does add new features to the outlet of the crossing, it is the only alternative considered that preserves all of the remaining original components of the stone arch culvert.

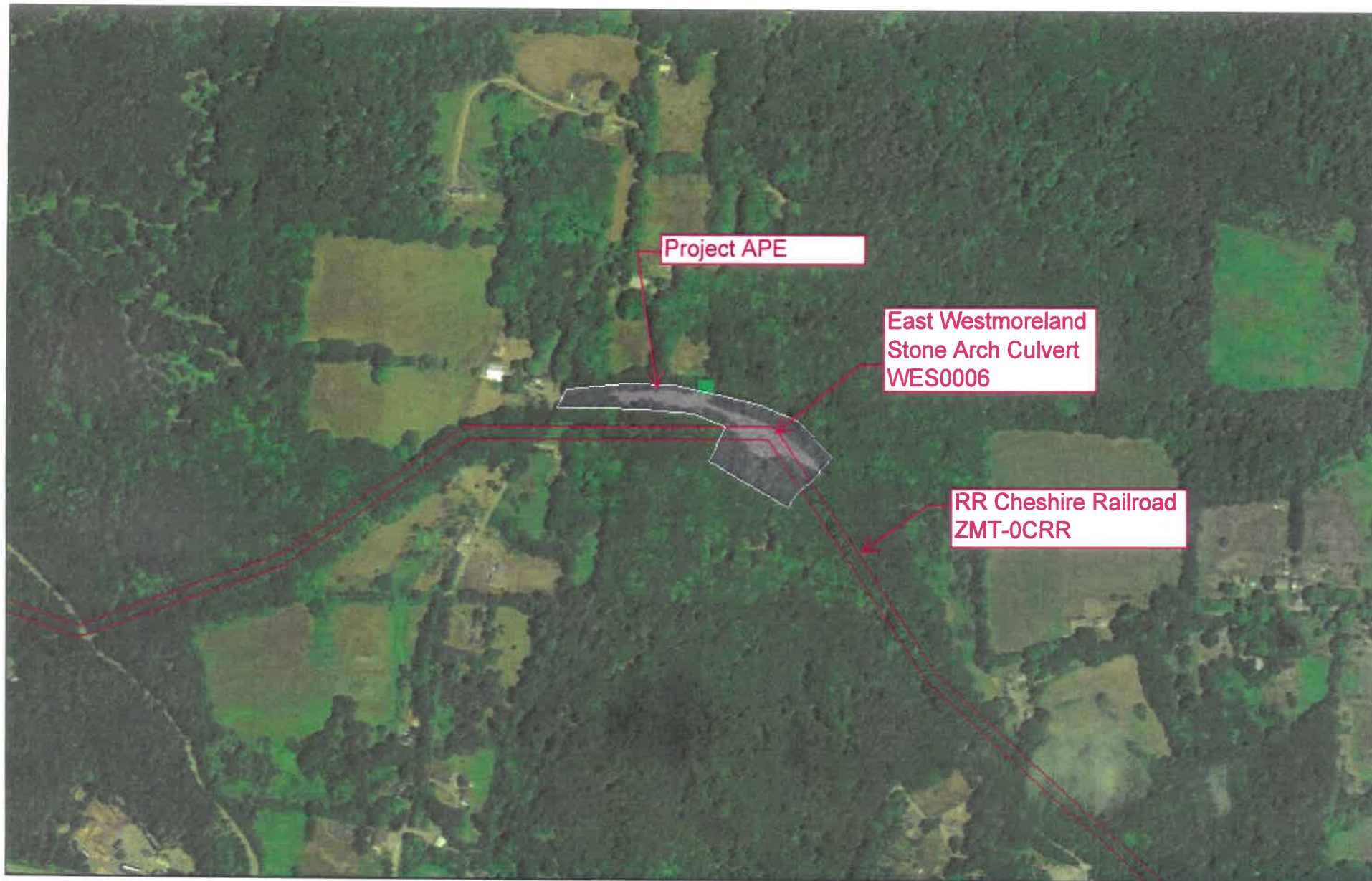
Westmoreland 41624 Location Map



Westmoreland 41624 Aerial Photo

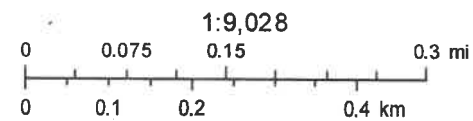


Westmoreland 41624 APE



December 31, 2019

- Individual Properties < 10 acres
- Project Areas
- Counties
- Towns



Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

This map was compiled using data believed to be accurate; however, a degree of error is inherent in all maps. This map was distributed "AS-IS" without warranties of any kind, either expressed or implied, including but not limited to warranties of suitability to a particular purpose or use. No attempt has been made in either the design or production of the maps to define the limits or jurisdiction of any federal, state, or local government. Detailed on-the-ground surveys and historical analyses of sites may differ from the maps.

NH DOT Name and Number and/or Project Title: Westmoreland 41624		DHR R&C #:
RPR Table 2: PROPERTIES WITHIN THE AREA OF POTENTIAL EFFECT; NOT YET SURVEYED		
Resource Identification (Any locational information that is cross-referenced with both mapping and photos; i.e. address, parcel number, mile marker)	Estimated Construction Date	Basis for date: owner info., visual, municipal records etc.
Martin; Map R19, Lot 12	1850	Mosaic
West; Map R19, Lot 13	1790	Mosaic
Watts; Map R14, Lot 8	1989	Mosaic
Lynch; Map R14, Lot 10	1981	Mosaic

NH DOT Project and Number and/or Project Title: Westmoreland 41624				DHR R&C #:
RPR Table 1: PREVIOUSLY SURVEYED OR LISTED PROPERTIES				
NH DHR Property Name / Historic District Name	NH DHR Inventory #	National Register-listed, Eligible, or Not Eligible	Date of Determination (mm/dd/yy)	National Register Criteria of Significance (if applicable)
East Westmoreland Stone Arch Culvert	WES0006	Individual: NR/SR Eligible, also in district	10/08/2008	A and C
Cheshire Railroad	ZMT-0CRR	Individual/Districts: more information needed	12/18/1996	Potentially A and C

Supplemental Westmoreland Arch Information

Cheshire Branch Railroad Corridor

Updated December 31, 2019

OVERVIEW

A portion of the outlet of the Westmoreland granite arch collapsed in 2003 and again in 2007. After the 2007 collapse, the Department's Bureau of Bridge Maintenance inspected the arch and made recommendations for repair and maintenance going forward. Bridge Maintenance wrote an email on November 15, 2007 to Brian Lombard explaining what they found and their recommendations for short term actions and long term repairs.

Bridge Maintenance felt that the most important work that would stabilize the arch was to install a concrete invert (floor) in the arch to keep the base stones supporting the arch from becoming undermined and causing further arch collapse. Concrete inverts have been installed in many granite arches throughout the State and have proved effective in retaining the arch structures. Bridge Maintenance installed the concrete invert in approximately 150 feet of the inlet end of the arch in 2008 at a cost of almost \$80,000. They were not able to install the invert in the remaining 30 feet to the collapsed outlet end because sections were already undermined and the arch was too unstable to place workers in that area.

In 2010, the Department obtained approval from NH Department of Cultural Resources to remove approximately 10 feet from the top of the embankment, construct access to the outlet end and move the slope away from the collapsed end of the arch to prevent additional soil material from falling into White Bridge Brook. This work was completed over the winter and the slopes at the outlet end of the arch were stabilized to prevent additional erosion. The cost of this stabilization work was nearly \$200,000. This was an interim step to stabilize conditions at the arch, but it did not resolve the real problem of the outlet of the arch being unstable.

POSSIBLE ALTERNATIVES

After a large storm and further collapse in 2013, the Department, NHDES Wetlands Bureau, NH Emergency Management and other State and Federal agencies evaluated this granite arch and investigated alternatives for resolving the arch collapse problem; repair the outlet end, remove the arch entirely, add a new culvert beside the arch or put in a bridge over the brook. It was determined that the most cost effective solution and best engineering remedy for the downstream drainage issues and concerns was to maintain the granite arch in place, construct a concrete header on the remaining portion of the outlet end and complete the restoration of the site (Alternative A, described below). In addition to being the least costly option for dealing with the issue, the drainage engineers that studied the arch determined that the arch also acted as a metering culvert retaining heavy flow from upstream during large storms that could cause more downstream flooding if the arch was not partially restricting and metering the flow.

The following are the advantages and disadvantages, and the cost estimates for the alternatives mentioned above to deal with the unstable arch issue. The estimates include all design, permitting, construction, inspection, sediment control and site restoration costs.

A. Concrete Header at Outlet: \$400,000

After analyzing the other alternatives listed below, this alternative was determined to be the most cost effective and least intrusive solution to stabilize the arch for the following reasons:

- It minimizes work on the arch and on the rail corridor because it limits the work area to the outlet of the arch and adjacent slope
- It retains all of the remaining portions of the arch and provides a permanent stable engineered solution that stops further collapse of the arch
- It proposes to retain the remaining two granite wing sweeps that designate the end of the original arch

The following is the proposed concept for stabilizing the outlet of the arch:

1. Construct a 2 foot thick, 41 linear foot concrete slab from the existing floor slab inside the arch to the beginning of the remaining wing sweeps to ensure that additional sections of the granite walls and the wing sweeps are not undermined and to provide a footing for the new side walls of the outlet structure. Install rip-rap with fabric in front of the existing wings starting at the concrete slab to stabilize them and match into the grade of the existing stream bed.
2. Construct two 8-foot-high side walls on the new concrete slab from the remaining end of the arch to the remaining wing sweeps to stabilize the exposed partially collapsed granite arch walls and the wing sweeps. If the concrete side walls are not installed, then the wing sweeps will need to be removed because they are blocking the clear outflow from the arch causing the side slopes to washout.
3. Construct a new concrete face header on the end of the granite arch to secure all of the exposed ends of the partially collapsed granite arch walls.
4. Backfill the new concrete side walls and install geotextile fabric and rip rap on top of the slopes to prevent erosion during high water events.
5. Stabilize the new slope behind the header with vegetation

The following steps must be completed to obtain approval to make the proposed repairs to the arch and begin restoration of the arch outlet:

1. Obtain approval from Cultural Resources
2. Complete final project plans based on input from Regulating Agencies and Bridge Maintenance
3. Submit application to NHDES to obtain a wetlands permit for the project

B. Remove Entire Granite Arch: \$1,050,000

This would involve removing approximately 50 feet of remaining embankment over the arch and then extending the excavation for a distance of approximately 300 feet to create a 2:1 slope from the existing embankment elevation down to the brook level. This excavation will amount to approximately 26,000 cy which will need to be rehandled to dispose of it. This alternative will

involve removing the granite arch and creating a new brook channel. The following are some significant hurdles that would need to be overcome:

1. Obtain permission from DHR to remove the arch. It is unlikely that DHR will permit the removal based on our previous meetings and discussions with them, but if they were to agree there would be serious (and possibly costly) mitigation requirements.
2. Obtain permission from NHDES to create a new section of brook channel after the granite arch is removed. Any approval will most likely come with substantial requirements.
3. A site would need to be found to waste the estimated 26,000 cy of excavated material including the railroad contaminated soils that are present.
4. Water flow will need to be diverted when the actual removal of the arch is taking place and work will need to take place during low water flow.
5. The concrete invert inside the arch would need to be removed and disposed of, and a new brook bottom would need to be constructed.
6. The trail and railroad corridor would be severed by the brook and steep approach grades to the brook level.

C. Install Concrete Box or Open Bottom Culvert and Retain Granite Arch: \$1,275,000

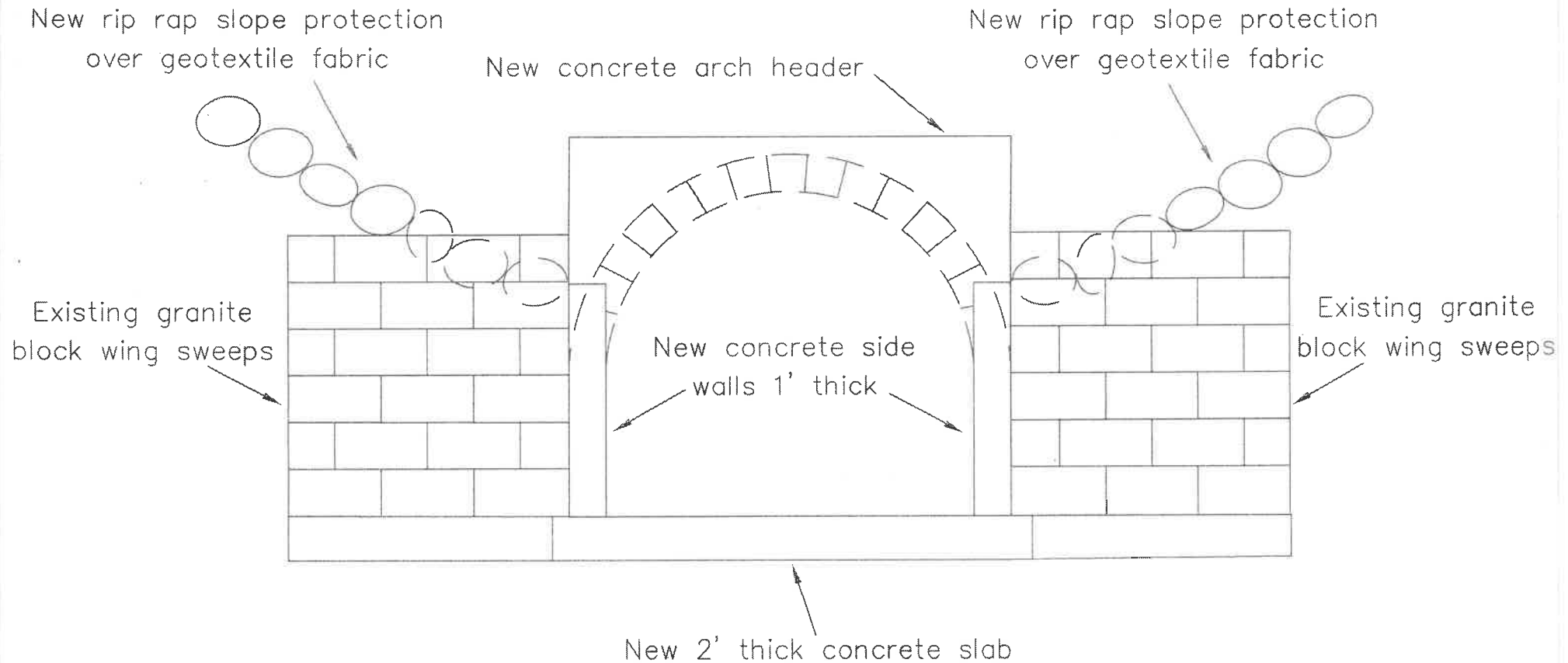
This would involve all of the work outlined in Alternative B above with the exception of removal of the arch, and in addition there would be the cost of purchasing and installing a large concrete box. The granite arch could remain after the water is diverted to the new culvert. During construction, water could continue to be run through the arch until the new culvert is completed. DHR probably wouldn't be as concerned about this alternative because the arch would remain in place, but they would still need to weigh in.

1. One of the major difficulties with this alternative will be finding a good location for this new culvert beside the arch because the existing arch sits in the low spots of the ravine and the ground rises up from the arch. Channel approach work will be required.
2. A wetlands permit from NHDES will be needed to create a new brook channel.
3. A site would need to be found to waste the estimated 20,000 cy of excavated material that includes LRS.
4. Fill (6,000 cy) will need to be reconstructed over the new culvert along with reconstruction of the trail.
5. An emergency spillway would need to be constructed since the embankment over the new culvert would be much lower than the existing embankment that impounds water during heavy storms.
6. Some work will still need to be done to the outlet end of the arch to remove unsafe blocks from the arch that could be a hazard to anyone walking around the arch.

D. Install Bridge over White Bridge Brook and Maintain Cheshire Railroad: \$1,400,000

This would involve all of the excavation and arch removal work outlined in Alternative B above, and in addition there would be the cost of purchasing and installing a bridge across the brook for trail use. This would have the same cost as Alternative B plus the bridge and trail reconstruction costs. The same issues for Alternative B would apply to this work as well. It is possible that the funding for the bridge and trail reconstruction portion of the work could come from other sources such as the Trails Bureau.

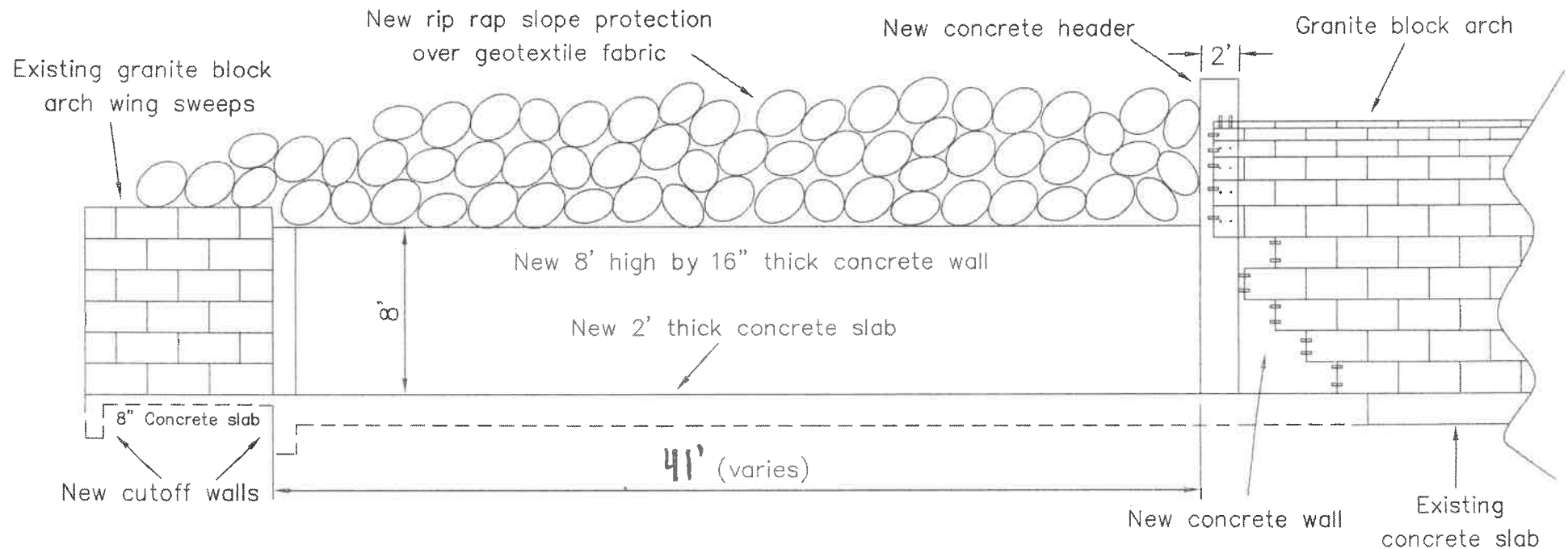
WESTMORELAND GRANITE ARCH



CONCEPTUAL SECTION VIEW OF CONCRETE OUTLET
Not to Scale

NH Department of Transportation
Bureau of Rail & Transit
PO Box 483 Concord, NH 03302
Brian Lombard, PE 4-3-18

WESTMORELAND GRANITE ARCH

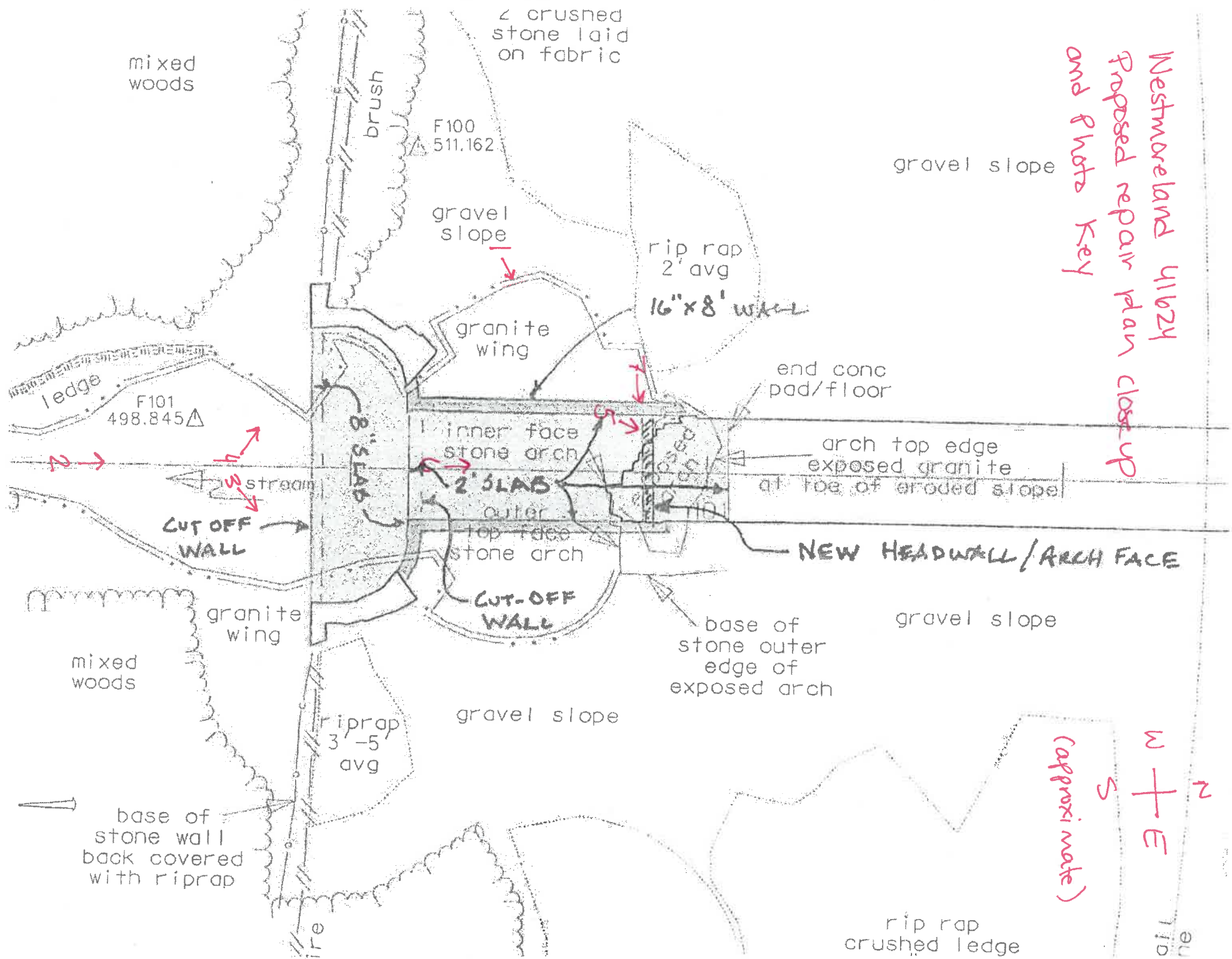


CONCEPTUAL SECTION VIEW OF CONCRETE OUTLET

Not to Scale

NH Department of Transportation
Bureau of Rail & Transit
PO Box 483 Concord, NH 03302
Brian Lombard, PE 4-3-18

Westmoreland 41624
Proposed repair plan close-up
and Photo Key



N
S
E
W
(approximate)

NHDOT Westmoreland 41624

NHDHR R&C #145, RPR Update Photos

Stone Arch Culvert carrying Cheshire Railroad over White Bridge Brook in East Westmoreland

Photos taken by NHDOT Bureau of Rail and Transit, 11/27/2019



Figure 1. Looking east at the stone arch culvert outlet from previously cut back railroad fill slope



Figure 2. Looking north at the stone arch culvert outlet, including original wingwall remnants, from downstream



Figure 3. Looking northeast at stone arch culvert outlet and eastern wingwall remnant from downstream



Figure 4. Looking northwest at the stone arch culvert outlet and western wingwall remnant from downstream



Figure 5. Looking north at the stone arch culvert outlet including existing concrete invert



Figure 6. Looking north at the stone arch culvert outlet remaining blocks and stone riprap on banks



Figure 7. Looking northeast at remaining stone blocks at current culvert outlet

This aerial map, titled "Westmoreland Arch Alignment Comparison," illustrates the historical and current paths of a trail. The map features several labeled sections: "No. 5," "No. 6," "No. 7," and "No. 13." A prominent dashed line represents the "Original centerline of track," while a solid line indicates the "Current trail location." A yellow callout box specifies an "Approx. offset = 24-feet" between these two lines. A scale bar at the bottom left shows distances from 0 to 280 feet. A north arrow is located in the upper right corner. Other annotations include "E.J. Holden," "PRIVATE CROSSINGS," and "Quinn's 16 x 105'." The map also shows various elevation points and a red line segment near the center.

This aerial map, titled "Westmoreland Arch Alignment Comparison," illustrates the historical and current paths of a trail. The map features several labeled sections: "No. 5," "No. 6," "No. 7," and "No. 13." A prominent dashed line represents the "Original centerline of track," while a solid line indicates the "Current trail location." A yellow callout box specifies an "Approx. offset = 24-feet" between these two lines. A scale bar at the bottom left shows distances from 0 to 280 feet. A north arrow is located in the upper right corner. Other annotations include "E.J. Holden," "PRIVATE CROSSING," and "Quinn's 15 x 105'." The map also includes various elevation points and survey markers.

This aerial map, titled "Westmoreland Arch Alignment Comparison," illustrates the historical and current paths of a trail. The map features several labeled sections: "No. 5," "No. 6," "No. 7," and "No. 13." A prominent dashed line represents the "Original centerline of track," while a solid line indicates the "Current trail location." A yellow callout box specifies an "Approx. offset = 24-feet" between these two lines. A scale bar at the bottom left shows distances from 0 to 280 feet. A north arrow is located in the upper right corner. Other annotations include "E.J. Holden," "PRIVATE CROSSING," and "Quinn's 16 x 105'." The map also shows various elevation points and a small red line segment near the center of the trail.

This aerial map, titled "Westmoreland Arch Alignment Comparison," illustrates the historical and current paths of a trail. The map features several labeled sections: "No. 5," "No. 6," "No. 7," and "No. 13." A prominent dashed line represents the "Original centerline of track," while a solid line indicates the "Current trail location." A red line segment highlights a specific area of interest. A scale bar at the bottom left shows distances from 0 to 280 feet. A north arrow is located in the upper right corner. Other annotations include "E.J. Holden," "PRIVATE CROSSINGS," and "Quinn's 16 x 105'." A callout box points to a specific location with the text "Approx. offset = 24-feet."



Westmoreland Arch Elevation Comparison



**Westmoreland Stone Arch Culvert
On the Cheshire Branch Railroad Line, MP100.36**

Summary of Activity

2003

July-August: Large storm events inflict heavy damage on the East Westmoreland Stone Arch Culvert causing a 20' section of the outlet to wash out and collapse. Widespread restoration efforts associated with these storms were performed under FEMA Disaster #1489.

October: FEMA authorized brook cleanup. Project 66016J is set up.

October 24: NH DOT submits an application to DES for permission to remove arch debris from the brook

* **November 25:** NHDES issues Wetlands and Non-Site Specific Permit #2003-02440

December 3: NHDOT receives letter from Edna Feighner, NHDHR, about salvaging the blocks and rebuilding the arch

December 12: Pat Rawson Construction removed blocks and debris from brook & stabilized banks

* **December 17:** The culvert is discussed at the Natural Resource Agency Meeting as part of NHDOT Project 14109 which was created to address multiple washouts from the July/August storms.

2007

Summer: Heavy storms cause additional damage

October 17: NHDOT inspected and photographed additional collapse at the outlet end of the arch

November: Debris was cleaned out of the brook under the prior DES permit 2003-02440

2008

July 17: NHDOT submits an application to DES for permission to construct a concrete floor inside the arch to protect against future arch collapses, with a request for expedited review by NHDES due to concerns about the stability of the culvert to survive another high flood event

* **July 30:** Individual Inventory Form #WES0006 is completed by Sarah LeVaun Gaulty, NHDOT, the culvert is determined to be eligible for listing on the National Register of Historic Places individually and as part of a district for Criterion A and C.

- * **August 4:** Wetlands and Non-Site Specific Permit 2008-01389 issued by DES to construct a concrete floor slab inside the stable section of the arch to protect the side support walls from undermining which would contribute to the further collapse of additional arch sections.

September: Bridge Maintenance installed the concrete floor slab with fish baffles.

2010

- * **January 7:** The culvert is brought to the Cultural Resource Agency Meeting to discuss the Request for Project Review #145 including the status of the arch condition and request permission to remove fill from the top of the embankment so the slope could be pulled back from the collapsed end of the arch to prevent additional soils from falling into the brook. See attached minutes.
- * **February 11:** The culvert is brought to the Cultural Resource Agency Meeting to discuss options for the arch. Doug Gosling explained why the arch could not be reconstructed with the original granite blocks.
- * **March 11:** The culvert is brought to the Cultural Resource Agency Meeting to discuss current arch conditions and mitigation for allowing NHDOT to alter the railroad corridor by removing embankment fill over the arch.
It was agreed that the Bureau would inspect and inventory all of the other granite arches on the State owned portion of the Cheshire Branch Railroad corridor as mitigation.
- * **April 21:** The culvert is brought to a Natural Resource Agency Meeting. The Department proposed a two phase project to repair the arch and it was approved in the minutes as follows;
- PHASE 1 – cut trees and remove approximately 10 feet of embankment over the arch to stop further arch damage caused by tree roots and pull the slope back from the end of the arch so soil would not continue to fall into the brook. To be completed in near future.
 - PHASE 2 – contingent upon the availability of funds and approval of SHPO, will consist of removing approximately 30' of the collapsing culvert outlet and constructing a new headwall. When the scope of the second phase of the project is determined, the project will be brought back to the Natural Resource agencies for review.

December: Morello Construction begins cutting the trees and removal of the excess fill over the granite arch.

2011

January – April: Morello Construction continues removal of the excess fill over the granite arch.

April: Another unstable portion of the arch collapsed during the spring runoff causing more blocks and earth to plug the brook.

April 8: NHDOT contacted DES requesting an emergency permit to clean out the new granite blocks and soil debris that fell into the outlet of the arch. NHDOT was authorized to remove the material from the brook under DES permit 2008-01389.

April: Morello Construction removed the debris from the brook and stabilized the outlet slopes under DES authorization.

July 1: NHDOT submits wetland application to NHDES for permission to construct a concrete toe wall under a side wall at the outlet of the arch.

* **July 14:** The culvert is brought to the Cultural Resource Agency Meeting to discuss the repair efforts that have occurred to date and to request review of the proposed toe wall construction to prevent further collapse of the culvert sidewalls. Laura Black and Joyce McKay agreed that the proposed toe walls themselves would have no adverse effect but that they are part of a larger effort continuous effort which has had a previously determined adverse effect on the culvert. The toe wall effort would be added to the existing Adverse Effect memo (*note that I do not have record of a previously existing adverse effect memo*)

* **July 28:** DES approves amendment to previously existing Permit #2008-01389 requesting to install a concrete toe wall at the outlet of the arch to secure an undermined section of the side wall. **NOTE:** This repair was not completed as designed because Bridge Maintenance considered it unsafe to excavate and have men working at the base of the unsupported section of the wall. Instead Bridge Maintenance filled the void with burlap sacks filled with cement to support the wall.

* **August 24:** Adverse Effect Memo from Elizabeth Muzzey. The letter describes the situation at the arch as of 2010 and states that the fill removal is an adverse effect but was necessary to lessen potential enlargement of the opening and continued collapse of the outlet end. The installation of the toe wall was included in the description of work but was noted as an action which would have no adverse effect, though the overall repair efforts over time are still considered an adverse effect.

2012

February: March – Brian Lombard, PE and Amy Lamb inspected and photographed all of the granite arch culverts on the State owned portion of the Cheshire Branch Railroad Corridor as requested for mitigation at the March 11, 2010 Cultural Resource Meeting.

April 12: NHDOT submits their first request for Capital Funds to complete final repairs to the outlet end of the arch in FY 2014-2015. Request not approved.

2013

June – July: A series of heavy storms caused the collapse of additional granite blocks and washout of the rip rap protecting the slopes at the outlet end of the arch.

July: FEMA project 24761 Setup to repair the storm damage.

* **July 19:** NHDES issues Emergency Permit 2013-01945 to remove debris from brook and place rip rap on side slopes.

July 24: NHDOT surveys the outlet area of the arch

* **August 13:** NHDES re-issued Emergency Permit 2013-01945 to extend the completion date to October 1, 2013 to allow DOT sufficient time to complete the work

August 31: NHDOT completes survey plans of arch outlet.

September: Mathews Construction removed debris from the brook and rebuilt the riprap side slopes.

2014

February 12: NHDOT completes conceptual plans for constructing a header on the outlet end of the arch.

February 21: DOT submits application to FEMA for Mitigation Funds to complete the repairs to the arch outlet. Request denied.

March 20: NHDOT submits second request for Capital Funds to complete final repairs to the outlet end of the arch in FY 2016-2017. Request denied.

2017

February 28: NHDOT submits their third request for Capital Funds to complete final repairs to the outlet end of the arch in FY 2018-2019

July: NHDOT's request for funding to repair the outlet end of the arch is approved in the Capital Budget for FY 2018 -2019 in the amount of \$400,000, this money is also intended to include repairs to the double stone arch culvert in Walpole.

December: NHDOT Bureau of Rail and Transit and Bureau of Bridge Maintenance visit site with to review potential repair options for the collapsed outlet portion of the arch.

2018

February: Begin preparation of revised arch outlet construction plans per recommendations from Bridge Maintenance and preparation of DES wetlands application

* **April 18:** The culvert is brought to the Natural Resource Agency Meeting. The proposed alternative involves installing a headwall around the now existing outlet and a concrete slab extending from the existing slab invert to the remnants of the original wingwalls downstream with 8' high concrete walls on either side connecting to and supporting both the remaining stone arch outlet and the wingwall remnants. The work will also install a concrete apron to connect to the concrete slab and fill in the area in between the original wingwall remnants to prevent undermining and collapse of these historic features. Gino Infascelli noted that while the proposed design preserves the historic elements, it presents significant environmental impacts and loss of stream channel.

* **May 10:** The culvert is brought to the Cultural Resource Agency Meeting. The same proposed alternative that was discussed at the April 18 Natural Resource Agency Meeting was presented. It was discussed that previous work on this culvert, considered to be Phase 1, has been determined to have an Adverse Effect, and that the proposed alternative is considered to be Phase 2 to complete stabilization and preservation of the remaining

historic features. Laura Black inquired if other alternatives have been considered, a summary of which is included in the updated RPR to be submitted to DHR.

Summer: Coordination with NHDR and development of plans and wetland application materials continue, but these efforts are not completed in time and the funding for the Capital Fund in the 2018-2019 FY lapses.

2019

November-December: an extension for the \$400,000 from the Capitol Fund is granted and efforts to complete Section 106 review and wetland permitting are re-started.

W/KH WRH

**STATE OF NEW HAMPSHIRE
INTRA-DEPARTMENT COMMUNICATION**

FROM Cathy Goodmen *CMG*
Environmental Manager

DATE December 3, 2003
AT (OFFICE) Bureau of Environment

SUBJECT WETLAND BUREAU PERMIT # 2003-02440
Westmoreland, # 66021

TO Brian Lombard, Bureau of Rails and Transit (271-2468), *received 12-3-03 nfb*

Forwarded herewith, for your files and further use as appropriate, are two copies of the subject permit as approved by the Wetlands Bureau and the Water Division on November 25, 2003

Please note specific conditions on permit.

TERRAIN ALTERATION

Note that the non-site specific permit (RSA 485-A:17 "Terrain Alteration") is part of this Wetlands Bureau Permit.

WATER QUALITY CERTIFICATION

- ☒ This permit covers the project's consideration for Water Quality protection and no further action is required by this office.
- ☐ This permit does not cover the Water Quality protection for this project. However, a Water Quality Permit will be obtained for this project.

CORPS PERMIT STATUS

- ☐ No Corps Jurisdiction
- ☐ SPGP (Minimum Impact) - No waiting period; no Corps approval required
- ☒ SPGP (Minor Impact)-Wait 30 days from NHWB issuance date; no written approval from Corps required
- ☐ SPGP (Major Impact)-Wait 30 days from NHWB issuance date; written approval from Corps required
- ☐ Emergency - No waiting period; No written approval from Corps required
- ☐ Amendment - No waiting period; No written approval from Corps required
- ☐ Corps Individual Permit Required

COASTAL ZONE MANAGEMENT (CZM) STATUS

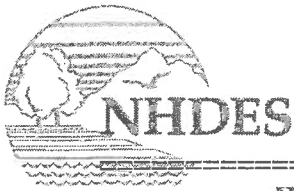
- ☒ Outside of Coastal Zone-consistency finding not necessary from OSP
- ☐ Within Coastal Zone (Non-Federal Action)-consistency finding not necessary from OSP
- ☐ Within Coastal Zone (Federal Action)-if covered by SPGP, or no Corps' jurisdiction, consistency finding is automatic from OSP
- ☐ Within Coastal Zone (Federal Action)-if individual Corps permit, written consistency finding is necessary from OSP

EROSION CONTROL PLAN STATUS

- ☐ Erosion Control Plan Required; Submit Erosion Control Plan to DES Wetlands Bureau

If you have any questions, please call 271-6781.

CMG:cmg
encl.



State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095
(603) 271-2147 FAX (603) 271-6588



WETLANDS AND NON-SITE SPECIFIC PERMIT 2003-02440

RECEIVED
BUREAU OF ENVIRONMENT

NOV 26 2003

Permittee: NH Dept of Transportation, Po Box 483, Concord, NH 03301

Project Location: Gilboa Rd, Westmoreland
Westmoreland Tax Map/Lot No. /

Waterbody: Mill Brook

Page 1 of 2

APPROVAL DATE: 11/25/2003

EXPIRATION DATE: 11/25/2008

N.H. DEPARTMENT OF
TRANSPORTATION

Based upon review of the above referenced application, in accordance with RSA 482-A and RSA 485-A:17, a Wetlands Permit and Non-Site Specific Permit was issued. This permit shall not be considered valid unless signed as specified below.

PERMIT DESCRIPTION: Remove 500 sq. ft. of fallen granite blocks from the stream; repair a portion of the collapsed stone arch culvert and place blocks to stabilize 700 sq. ft. of the banks. NHDOT project #66021.

THIS APPROVAL IS SUBJECT TO THE FOLLOWING PROJECT SPECIFIC CONDITIONS:

1. All work shall be in accordance with plans by NHDOT Bureau of Rail and Transit dated October 20, 2003 as received by the Department on October 28, 2003.
2. Dredged material shall be placed for stabilization or out of the DES Wetlands Bureau jurisdiction.
3. Appropriate siltation/erosion/turbidity controls shall be in place prior to construction, shall be maintained during construction, and shall remain until the area is stabilized.
4. Construction equipment shall minimize the impacts within surface waters as noted in the construction sequence.
5. The tracks or tires of the equipment crossing the stream shall be devoid of soil material prior to the two crossings.
6. Within three days of final grading in an area that is in or adjacent to wetlands or surface waters, all exposed soil areas shall be stabilized by seeding and mulching during the growing season, or if not within the growing season, by mulching with tack or netting and pinning on slopes steeper than 3:1.
7. The contractor responsible for completion of the work shall utilize techniques described in the DES Best Management Practices for Urban Stormwater Runoff Manual (January, 1996) and the Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire (August, 1992).
8. Extreme precautions to be taken within riparian areas to limit unnecessary removal of vegetation during road construction and areas cleared of vegetation to be revegetated as quickly as possible.
9. There shall be no further alteration to wetlands or surface waters without amendment of this permit.
10. Bank repair shall be constructed within seven days of culvert the culvert repair.
11. Work shall be done during low flow.
12. The file shall be notified in writing at least 24 hours prior to the project start date.

GENERAL CONDITIONS WHICH APPLY TO ALL DES WETLANDS PERMITS:

1. A copy of this permit shall be posted on site during construction in a prominent location visible to inspecting personnel;
2. This permit does not convey a property right, nor authorize any injury to property of others, nor invasion of rights of others;
3. The Wetlands Bureau shall be notified upon completion of work;
4. This permit does not relieve the applicant from the obligation to obtain other local, state or federal permits that may be required (see attached form for status of federal wetlands permit);
5. Transfer of this permit to a new owner shall require notification to and approval by the Department;
6. This permit shall not be extended beyond the current expiration date.
7. This project has been screened for potential impacts to **known** occurrences of rare species and exemplary natural communities in the immediate area. Since many areas have never been surveyed, or have received only cursory inventories, unidentified sensitive species or communities may be present. This permit does not absolve the permittee from due diligence in regard to state, local or federal laws regarding such communities or species.

APPROVED: *Geri Ingalls*
DES Wetlands Bureau

=====

BY SIGNING BELOW I HEREBY CERTIFY THAT I HAVE FULLY READ THIS PERMIT AND AGREE TO ABIDE BY ALL PERMIT CONDITIONS.

James F. Marshall
OWNER'S SIGNATURE (required)

CONTRACTOR'S SIGNATURE (required)

*Received
11-1-03
Hob*



State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095
(603) 271-2147 FAX (603) 271-6588



NOTICE TO RECIPIENTS OF MINOR IMPACT N.H. WETLANDS PERMITS

Your permit was approved by the New Hampshire Wetlands Bureau as a minor impact project, and your project will be reviewed by the U.S. Army Corps. of Engineers for possible approval under the Army Corps New Hampshire State Programmatic General Permit - SPGP. The Army Corps will notify you within thirty (30) days if they will require additional information or an individual federal permit application.

If you do not hear from the Army Corps within thirty (30) days, and your project meets the conditions of the SPGP (attached), your project will automatically be approved under the SPGP. You should contact the Army Corps, at 1-800-343-4789, if your project does not meet the conditions of the SPGP.

NO WORK SHOULD BE DONE WITHOUT AUTHORIZATION FROM THE ARMY CORPS UNLESS THIRTY (30) DAYS HAVE PASSED AFTER N.H. WETLANDS BUREAU APPROVAL, AND ALL CONDITIONS OF THE SPGP ARE MET.

THESE APPROVALS DO NOT RELIEVE YOU FROM OBTAINING ANY NECESSARY LOCAL PERMITS THAT MAY BE REQUIRED BY YOUR TOWN.

IF YOU HAVE ANY QUESTIONS, PLEASE FEEL FREE TO GIVE US A CALL AT 603-271-2147

THIS NOTICE WAS SENT WITH MINOR IMPACT PERMIT # 63-2440 ON 11-16-03 BY [signature]

CC: U.S. ARMY CORPS. OF ENGINEERS

WRN ✓
EWR BL

STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

DATE October 24, 2003

FROM: ^{DJD} Dennis J. Danna
Chief, Technical Services Section

AT (OFFICE) Department of
Transportation

SUBJECT Dredge & Fill Application
Westmoreland, #66021

Bureau of
Environment

TO Gino Infascelli, Public Works Permitting Officer
New Hampshire Wetlands Bureau
Six Hazen Drive
Concord, New Hampshire 03301

Forwarded herewith is the application package prepared by the Bureau of Rail and Transit for the subject Minor impact project. The project consists of the reconstruction of a fallen arch culvert that conveys Mill Brook in Westmoreland. The blocks were deposited in the brook due to heavy rains in July and August. This project was discussed at the October 15, 2003 Natural Resource Agency meeting. The total impact area for this project is 1200 square feet within NH Wetlands Bureau jurisdiction. The project qualifies as a Minor per Wt. 303.03 (k) of NH Wetlands Bureau rules. Proper erosion and siltation control devices will be in place throughout construction.

This project does not qualify as an emergency. However, we would like to perform the work as soon as possible. Our time frame is approximately two weeks. Any consideration and expedition you could provide us would be appreciated.

The lead people to contact for this project are Brian Lombard, P.E., Bureau of Rail and Transit (271-3465) and J.P. Demers, Environmental Manager, Bureau of Environment (271-4048 or jdemers@dot.state.nh.us).

Enclosed is a copy of a payment voucher for this application.

If and when this application meets with the approval of the Bureau, please send the permit directly to Dennis Danna, Chief of Technical Services, Bureau of Environment.

DJD:jpd

Enclosures

C.C. NH Fish & Game w/encl.
US Army Corps of Engineers w/encl.
US Fish & Wildlife Service w/encl.
Environmental Protection Agency w/encl.
NH Division of Historic Resources w/encl.
National Marine Fisheries Service w/encl.

BOE
(1)
\$120.00
MINOR

Recorded 10/29/03
9



October 24, 2003

VIA CERTIFIED MAIL

Cindi Adler
Westmoreland Town Clerk
PO Box 111
Westmoreland, NH 03467

Dear Ms. Adler:

Re: Dredge and Fill Application
Westmoreland, #66021

As required by Chapter 482-A:3, New Hampshire Revised Statutes
of the referenced Dredge and Fill Application,
is, which have been submitted today to the NH

or your use in complying with the requirement
ute one copy each, as appropriate, to the
Board and Board of Selectmen (and Mayor or
be retained by your office and made reasonably
applications for public projects by agencies of
bureau, and additional, separate notification of
ction is required on your part with respect to
relative to this application.

Very truly yours,

Dennis J. Danna

Dennis J. Danna, Chief
Technical Services Section
Room 160-Tel. 271-3226

COMPLETE THIS SECTION ON DELIVERY

A. Signature ☒ Agent ☐ Addressee
Cindi Adler
B. Received by (Printed Name) *Cindi Adler*
C. Date of Delivery *10/29/03*
D. Is delivery address different from item 1? ☐ Yes ☐ No
If YES, enter delivery address below:

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.
4. Restricted Delivery? (Extra Fee) ☐ Yes

102596-02-M-1540

Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

*CINDI ADLER
Westmoreland Town Clerk
PO Box 111
Westmoreland, NH 03467*

2. Article Number

(Transfer from service label)

7002 0510 0000 4108 9766

PS Form 3811, August 2001

Westmoreland 66021

**NH WETLANDS BUREAU PERMIT APPLICATION
INTRA-DEPARTMENT PROJECT INFORMATIONAL FORM**

APPLICANT'S NAME: Brian Lombard, PE

BUREAU/AGENCY: Rail and Transit

CONTACT PERSON: Brian Lombard, PE

TELEPHONE #: 271-3465

EMAIL ADDRESS: Blombard@DOT.state.NH.US

PROJECT NAME: Westmoreland – Stone Arch Culvert on Mill Brook

STATE #: 66021

WORK CLASS CODE: 240

ACCOUNT CODE: 010 096 2991 090

BRIDGE #: N/A

COUNTY: Cheshire

PROPOSED ADVERTISING DATE: N/A

PROPOSED CONSTRUCTION DATE: Fall 2003

IS THIS A MAJOR OR MINOR WETLAND IMPACT PROJECT (YES/NO)? Minor Impact Project

IF YES, HAS A QUESTIONNAIRE LETTER BEEN SENT TO THE NH NATURAL HERITAGE INVENTORY?

MITIGATION: None Required

PROJECT DESCRIPTION: During the heavy rain storms and flooding in Westmoreland this July and August, approximately 20 feet of the outlet end of a 15' high stone arch culvert collapsed leaving the granite blocks piled in Mill Brook. We have received funding from FEMA to remove the blocks from the brook to prevent damming and water backup that might cause further damage to the remainder of the arch. The blocks removed from the stream will be placed on the eroded bank to stabilize it and prevent further erosion.

IS THE PROJECT LOCATED ALONG OR WITHIN A NH DESIGNATED RIVER (YES/NO)? No
(see NHWB Manual, Appendix R for list of designated rivers)

WILL CONSTRUCTION OCCUR DURING LOW-FLOW PERIODS (JULY 15 - OCT 1)? No

WILL THIS PROJECT INVOLVE UNCONFINED IN-STREAM CONSTRUCTION WORK? Yes

*Recorded
10-24-03
HJH*

Revised November, 1997

DEPARTMENT OF ENVIRONMENTAL SERVICES (DES)
WETLANDS BUREAU
6 Hazen Drive
Post Office Box 95
Concord, NH 03302-0095
603-271-2147 FAX 603-271-6588

STANDARD DREDGE AND FILL APPLICATION

Application for filling, dredging, or constructing structures under RSA 482-A and RSA 485-A:17

GENERAL INSTRUCTIONS: Type or print clearly; missing information may delay your application!

1. NAME OF OWNER: State of New Hampshire, Department of Transportation
Last, First, Middle

MAILING ADDRESS: PO Box 483 Concord NH 03302
Street/Road/Box # Town/City State Zip code

TELEPHONE: (603) 271-3226 FAX: (603) 271-7199

2. LOCATION OF PROPOSED CONSTRUCTION:

a. stone arch culvert under railroad line approximately 1/4 mile east of Gilboa Road Westmoreland
Street/road/highway Town/City

TAX MAP #s N/A LOT #'s N/A BLOCK#s N/A

3. Obtain Name of Waterbody from U.S. Geological Survey Map. If Waterbody is Unnamed, place an "X" in the appropriate box. ☐ IN, OR ☐ ADJACENT TO, Mill Brook (name of waterbody)

() Unnamed tributary to: _____
() Unnamed Pond () Unnamed stream () Unnamed wetland () Tidal Buffer Zone

4. Mark appropriate box(es) to indicate landform type(s): () Salt Marsh; () Tidal water; () Sand dune; () Bog;
() Freshwater marsh; () Swamp; () Wet meadow; () River; (X) Perennial stream; () Seasonal stream; () Lake;
() Upland (tidal buffer zone only);
() Other: _____

5. Provide a description of your proposed project: See attached sheet

6. Explain the need for the proposed project and why your approach has less environmental impact on the DES Wetlands Bureau's jurisdiction than other reasonable alternatives (use separate sheet if necessary). See attached sheet

7. Desired Starting Date: November 1, 2003 Estimated Completion Date: December 31, 2003

8. AUTHORIZED CONTRACTOR OR AGENT (Optional): State of New Hampshire Department of Transportation

MAILING ADDRESS: PO Box 483 Concord NH 03302
Street/Road/Box # Town/City State Zip code

TELEPHONE: (603) 271-3226 FAX: (603) 271-7199

FOR DES OFFICE USE ONLY:

Fee received: _____ FILE # _____
check # amount init. date

9. Area, volumetric and/or linear impact of proposed work within N.H. Wetlands Bureau jurisdiction (eg., lakes, ponds, streams, wetlands, dunes, tidal buffer zone, etc.)

- a. Estimated area of permanent impacts within wetlands 0 sq. ft.
- b. Estimated area of permanent impacts within non-wetland bank 700 sq. ft.
- c. Estimated area of permanent impacts within the upland portion of the Tidal Buffer Zone 0 sq. ft.
- d. Estimated area of temporary impacts 500 sq. ft.
- e. Estimated total area of all proposed work 1200 sq. ft. (in N.H. Wetlands Bureau jurisdiction).
- f. Estimated length of permanent impacts to banks 50 ft.
- g. Estimated length of permanent impacts to channel 0 ft.
- h. Estimated volume of impacts in Public Waters 0 cu. yd.
- i. Final deposition of dredged material N/A.
- j. Is proposed disposal site in wetlands (yes/no)? NO.
- k. If a channel is to be constructed, or a culvert or a bridge is to be installed, give the distance the flow of water is to be rerouted 0 ft.
- l. If dock or similar structure: length ft.; width ft.; total area of impact sq. ft.
- m. If waterfront project, indicate total length of shoreline frontage ft.
- n. If wall, riprap, beach, or similar project, indicate the length of proposed shoreline impact 0 ft.

10. **FILING FEE:** A check or money order made out to the DES Wetlands Bureau shall accompany the application. The minimum fee is \$50. MINOR and MAJOR PROJECTS are charged at the rate of: \$0.04 per square foot of requested impact (if less than \$50, the minimum fee applies); and/or \$100 per requested boat slip. The fee is based on the requested impact, not the approved impact. If an applicant is unsure of the correct fee, the application may be submitted with a \$50 minimum fee and the balance will be billed. The application will not be reviewed until the fee is paid in full.

The following are examples of projects that would qualify as minimum impact. A comprehensive definition of minimum impact is found in Wt 303.04 of the New Hampshire Administrative Code.

1. A seasonal pier not to exceed 6' in width, or 30' in length (4' X 20' in lakes less than 1000 acres) provided it is the only structure on the frontage.
2. Repair or replacement of an existing structure with no change in size, location, or configuration.
3. Most driveway crossings of small streams (less than 10 feet wide bank to bank) or narrow freshwater wetlands (less than 50 feet wide; not in bogs or marshes) to access an isolated piece of property.
4. Maintenance dredging within original bounds of a legally constructed project.

APPLICANT SIGNATURE. SIGNATURE BELOW CERTIFIES THAT: 1.) all abutters have been identified in accordance with the definition given in the general instructions sheet; 2.) those abutters have been sent notice by CERTIFIED MAIL; 3.) the applicant has read, and provided, the REQUIRED INFORMATION outlined in rule Wt 302.04 and listed on the Checklist for Preparing an NHDES Wetlands Bureau Application; 4.) The applicant has read, and understands, Rule Wt 302.03 and has chosen the least impacting alternative; 5) The applicant(s) has reviewed the information to be submitted and that the information is, to their knowledge true and accurate; 6) The applicant understands that the willful submission of falsified or misrepresentative information to the New Hampshire Department of Environmental Services is a criminal act which may result in fines or imprisonment.

signature of owner



print name

Brian Lombard, PE

date

10-23-03

signature of authorized agent (if applicable)

print name

date

TOWN CLERK SIGNATURE. I hereby certify that the applicant has filed five applications, five detailed plans, and five U.S.G.S. location maps with the town/city of: N/A as required by Chapter 482-A:3 (amended 1991), and I have received and retained certified postal receipts (or copies) for all abutters identified by the applicant.

N/A

signature of town/city clerk

date

**STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION**

FROM: Brian Lombard, PE
Railroad Operations Engineer

AT: NHDOT
Bureau of Rail & Transit

SUBJECT: Westmoreland Arch Culvert
Supplemental Application Information Sheet

DATE: October 21, 2003

TO: File

Question #5: Sometime in August 2003 during a prolonged bout of very heavy thundershowers, approximately 20' at the outlet end of a 180' long stone arch culvert collapsed into Mill Brook in Westmoreland. Short sections of the stone arch wall on both sides of the interior near the collapse were also undermined during this high water event.

FEMA will be proving funds for us to remove the granite blocks from the stream and to stabilize the eroded slopes at the arch outlet to prevent future flooding problems. We propose to remove the granite blocks from the stream and place some of the blocks on the eroded slopes at the outlet and stockpile the remainder onto higher ground away from the outlet. The existing stream bed is mostly exposed ledge and loose rocks with a hard bottom. We will remove as many blocks as possible from the stream while the equipment is parked on the bank, but we will need to enter the stream in order to remove the blocks that are closest to the end of the arch and to place several blocks into the undermined areas inside the arch. We will leave a barrier of blocks in the stream to divert the water to one side away from the excavation equipment when it will be in the stream. We will only work in the stream when the water is low and not during high water events.

We will protect the eroded slopes by placing blocks at the bottom of the eroded banks where they meet the edge of the stream and laying them as far up the slopes as possible. The remaining sections of eroded slope will be seeded and mulched, covered with geotextile grid or a combination of both. We will also be placing several of the blocks into the undermined areas in the arch walls just inside the arch outlet.

We will also need to cross the stream twice (once to reach the site and the other to leave) with the excavation equipment at a location approximately ¼ mile downstream from the outlet. All areas disturbed by the excavator will be hand raked smooth, seeded and mulched.

Question #6: This Project needs to be approved because the pile of blocks will cause the stream to dam up and possibly damage additional sections of the arch if they are not removed. Access to the site is only available from the bottom because of the 70' high fill and the steep slopes over the arch. We must work in a portion of the stream to pickup the blocks closest to the arch and to place the blocks into the voids in the arch walls just inside the arch outlet. We have endeavored to keep the impact on the stream to a minimum by working as much as possible from the ground beside the stream. We will only be working in the stream when the water is low and will divert the water away from the equipment by leaving a barrier of blocks in place.

Subject Photographs

Westmoreland Arch Damage



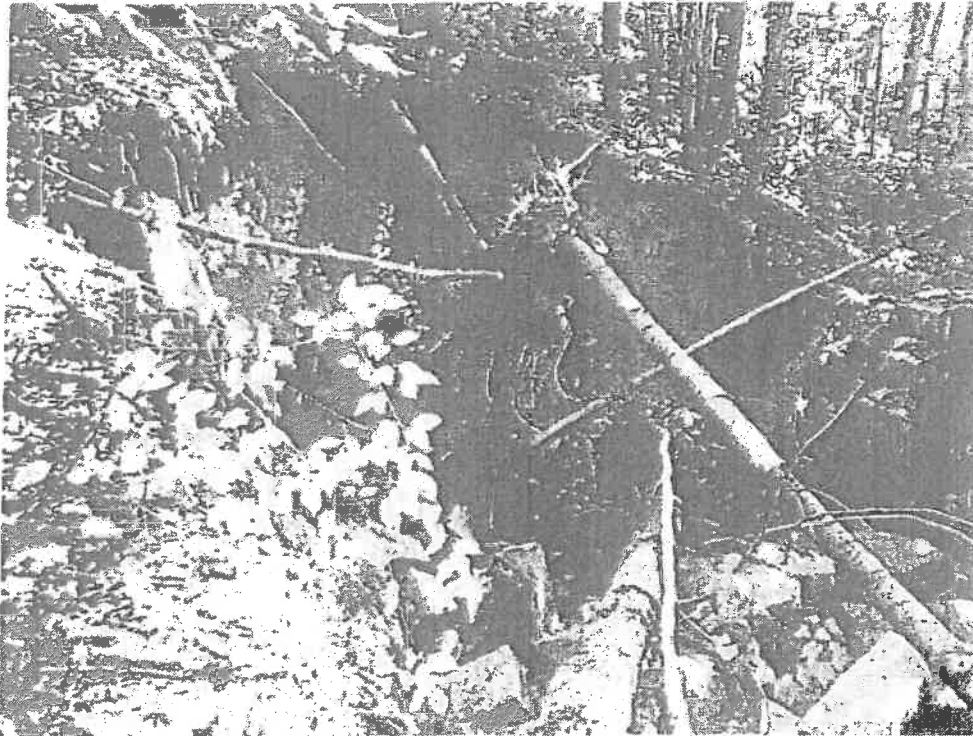
September 5, 2003 023 (2)



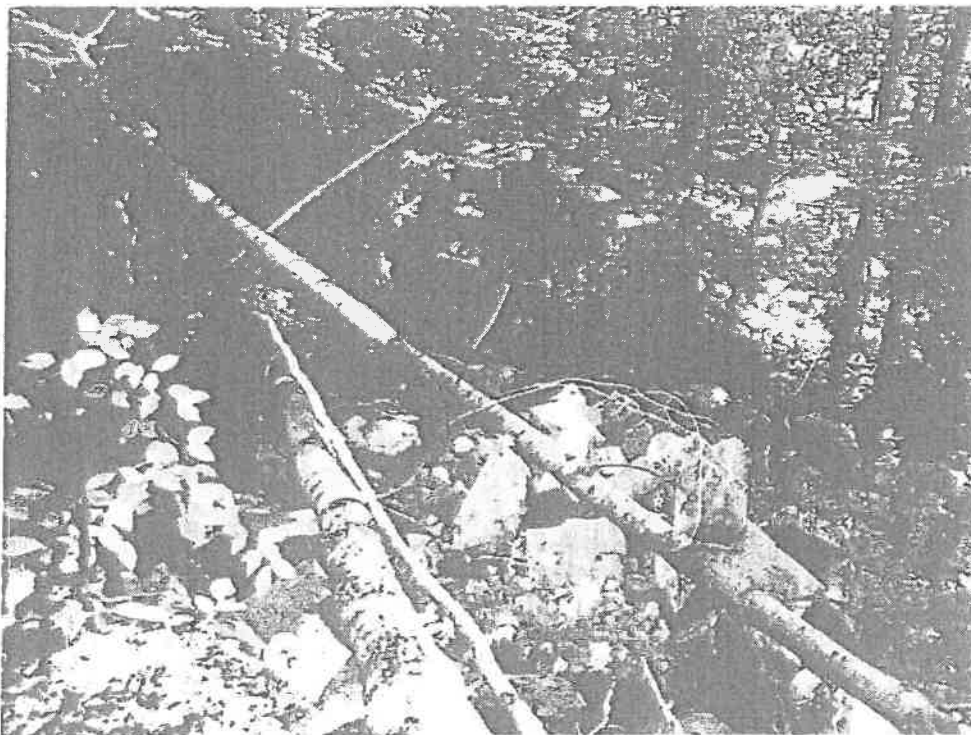
September 5, 2003 022 (2)

Subject Photographs

Westmoreland Arch Damage

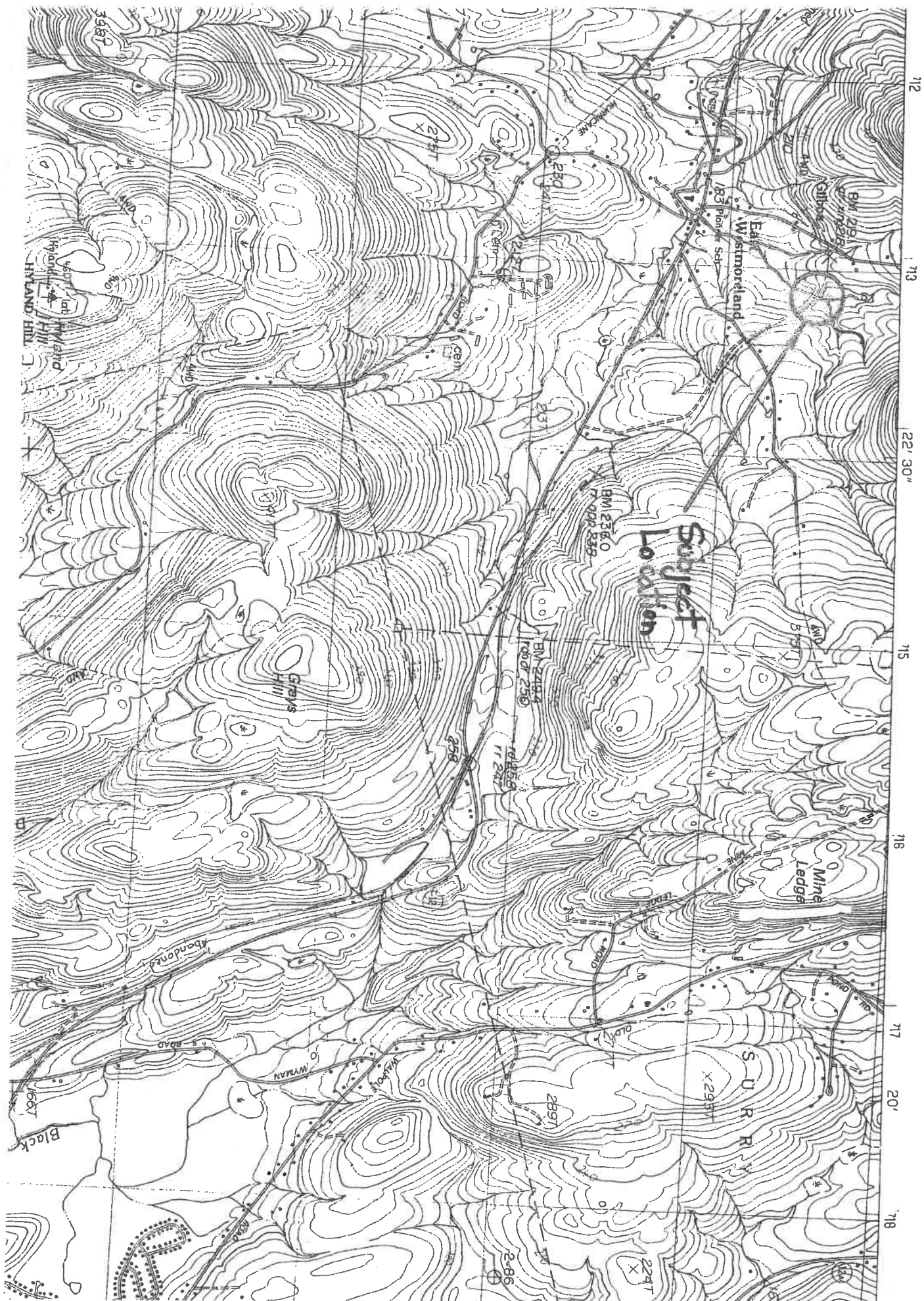


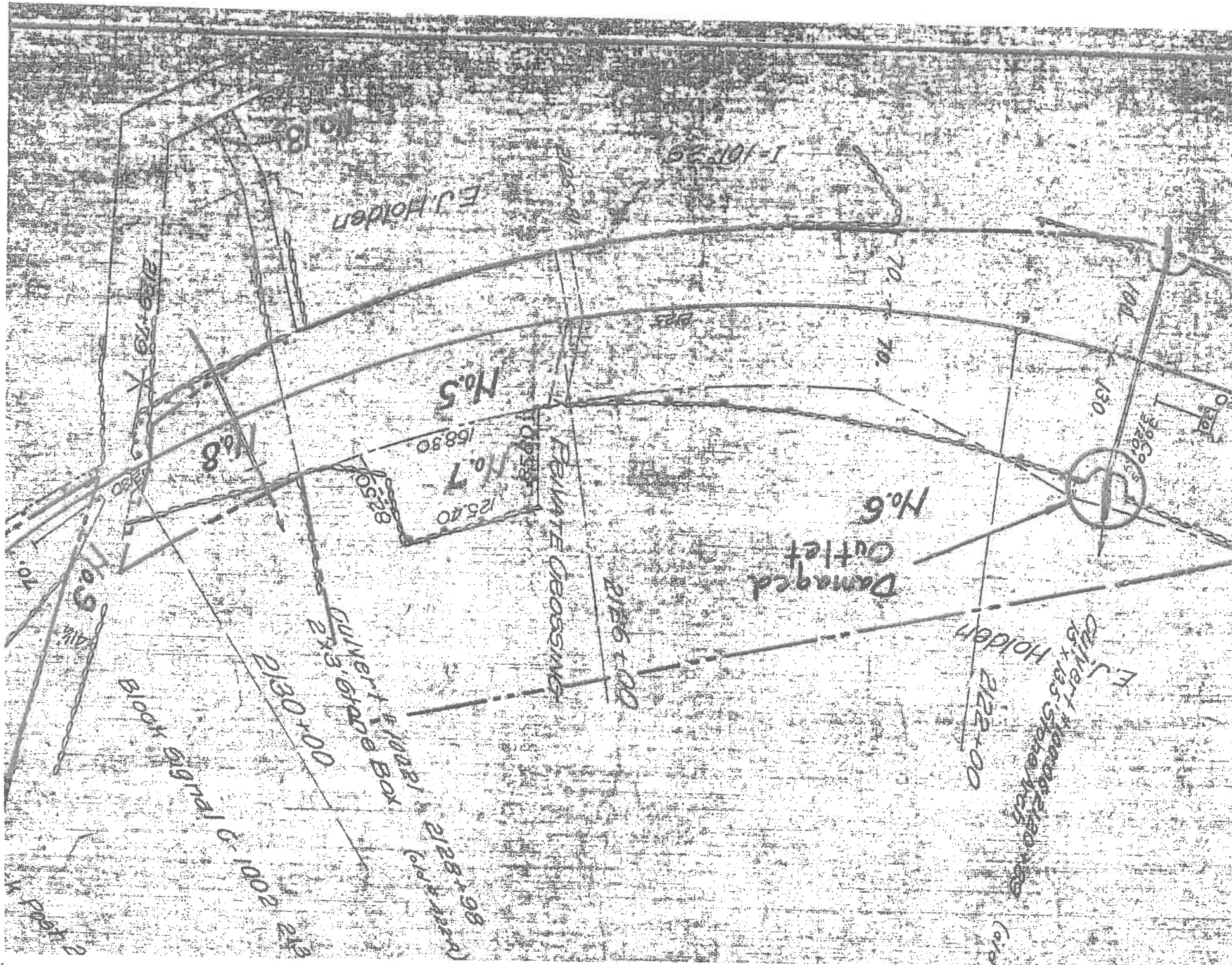
September 5, 2003 013 (2)



September 5, 2003 012 (2)







**NH WETLANDS BUREAU PERMIT APPLICATION
INTRA-DEPARTMENT PROJECT INFORMATIONAL FORM**

APPLICANT'S NAME: Brian Lombard, PE

BUREAU/AGENCY: Rail and Transit

CONTACT PERSON: Brian Lombard, PE

TELEPHONE #: 271-3465

EMAIL ADDRESS: Blombard@DOT.state.NH.US

PROJECT NAME: Westmoreland – Stone Arch Culvert on Mill Brook

STATE #: 66021

WORK CLASS CODE: 240

ACCOUNT CODE: 010 096 2991 090

BRIDGE #: N/A

COUNTY: Cheshire

PROPOSED ADVERTISING DATE: N/A

PROPOSED CONSTRUCTION DATE: Fall 2003

IS THIS A MAJOR OR MINOR WETLAND IMPACT PROJECT (YES/NO)? Minor Impact Project

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MITIGATION: None Required

PROJECT DESCRIPTION: During the heavy rain storms and flooding in Westmoreland this July and August, approximately 20 feet of the outlet end of a 15' high stone arch culvert collapsed leaving the granite blocks piled in Mill Brook. We have received funding from FEMA to remove the blocks from the brook to prevent damming and water backup that might cause further damage to the remainder of the arch. The blocks removed from the stream will be placed on the eroded bank to stabilize it and prevent further erosion.

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*Blombard
10-24-03
HLM*

Revised November, 1997

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WETLANDS BUREAU
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Post Office Box 95
Concord, NH 03302-0095
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signature of owner

print name

date

signature of authorized agent (if applicable)

print name

date

TOWN CLERK SIGNATURE. I hereby certify that the applicant has filed five applications, five detailed plans, and five U.S.G.S. location maps with the town/city of: N/A as required by Chapter 482-A:3 (amended 1991), and I have received and retained certified postal receipts (or copies) for all abutters identified by the applicant.

N/A
signature of town/city clerk

date

**STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION**

FROM: Brian Lombard, PE
Railroad Operations Engineer

AT: NHDOT
Bureau of Rail & Transit

SUBJECT: Westmoreland Arch Culvert
Supplemental Application Information Sheet

DATE: October 21, 2003

TO: File

Question #5: Sometime in August 2003 during a prolonged bout of very heavy thundershowers, approximately 20' at the outlet end of a 180' long stone arch culvert collapsed into Mill Brook in Westmoreland. Short sections of the stone arch wall on both sides of the interior near the collapse were also undermined during this high water event.

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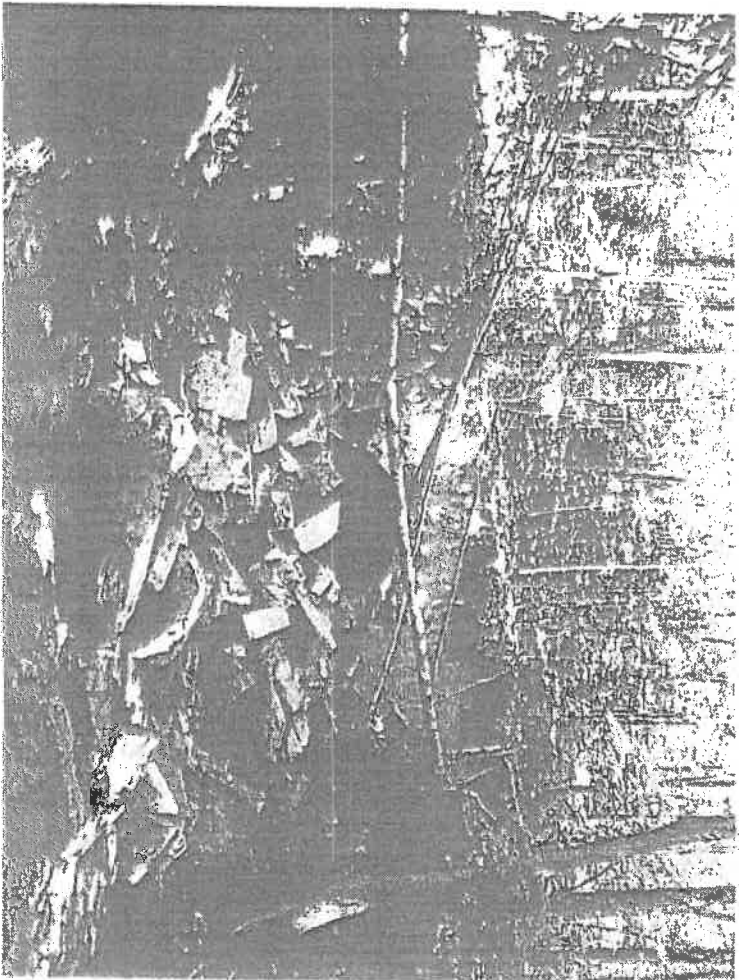
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Westmoreland Arch Damage



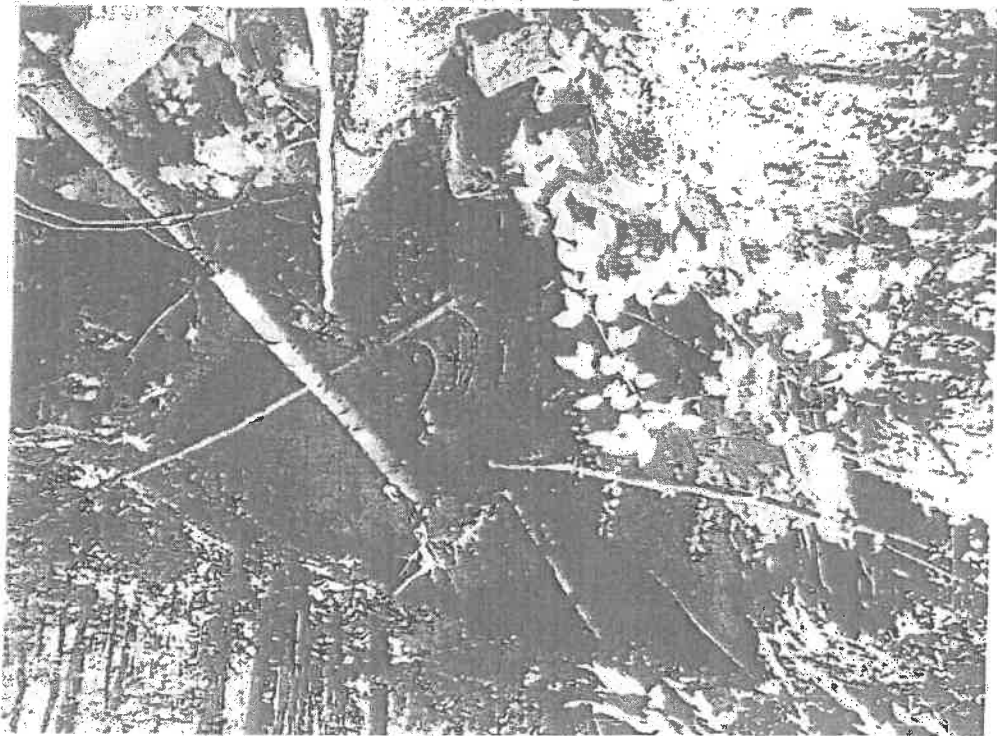
September 5, 2003 023 (2)



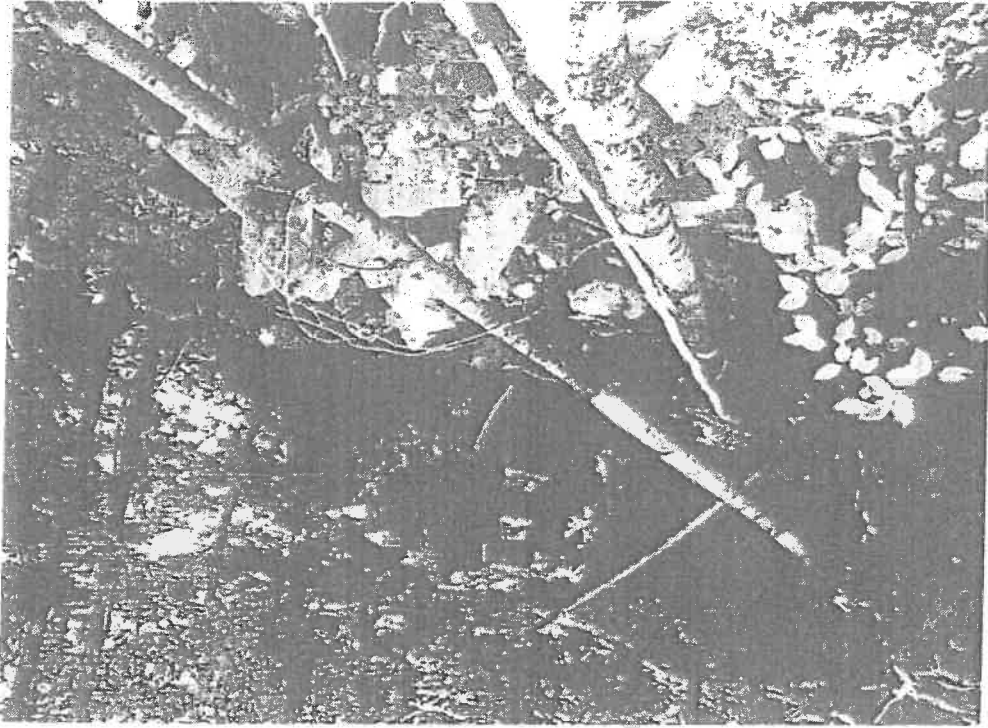
September 5, 2003 022 (2)

Subject Photographs

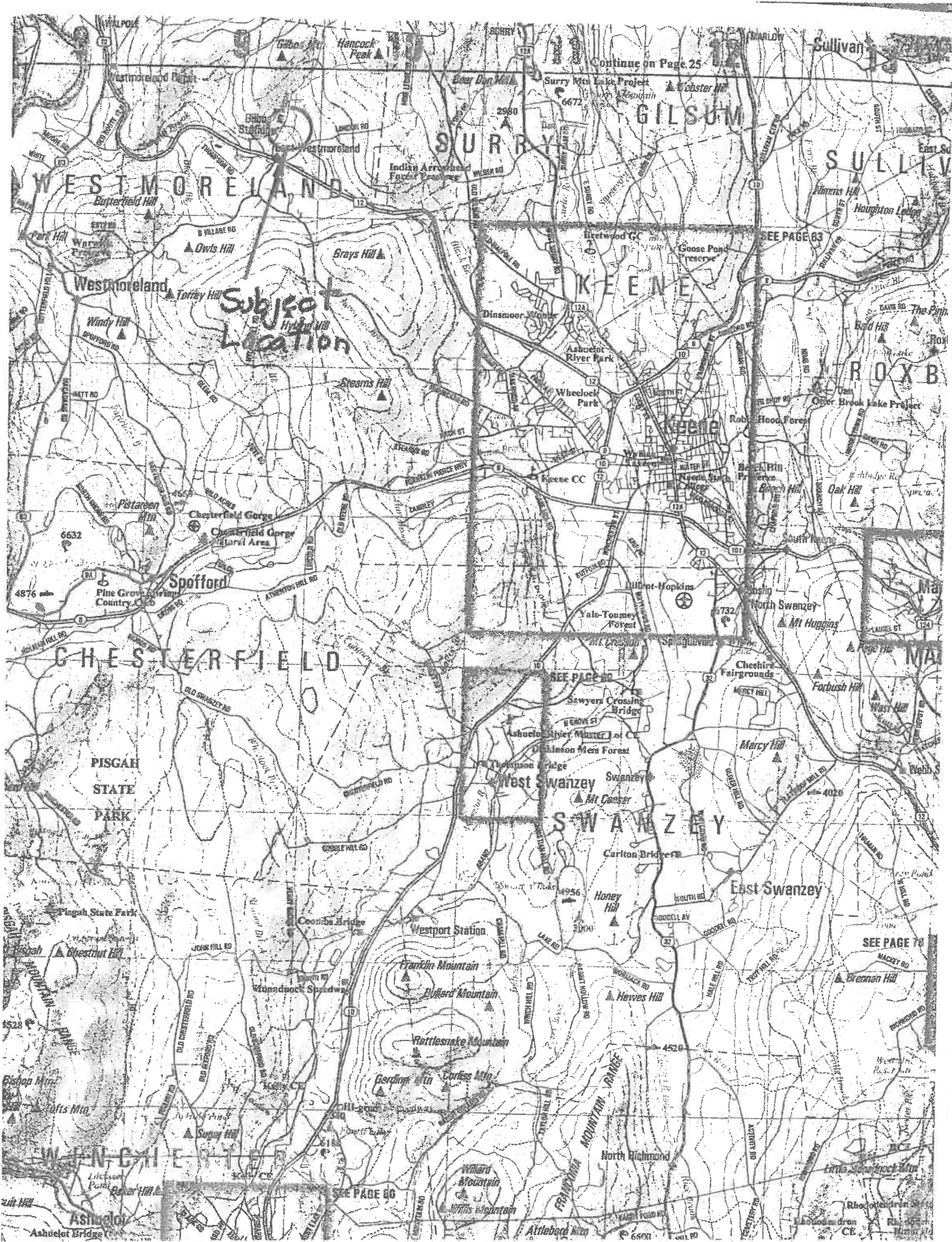
Westmoreland Arch Damage

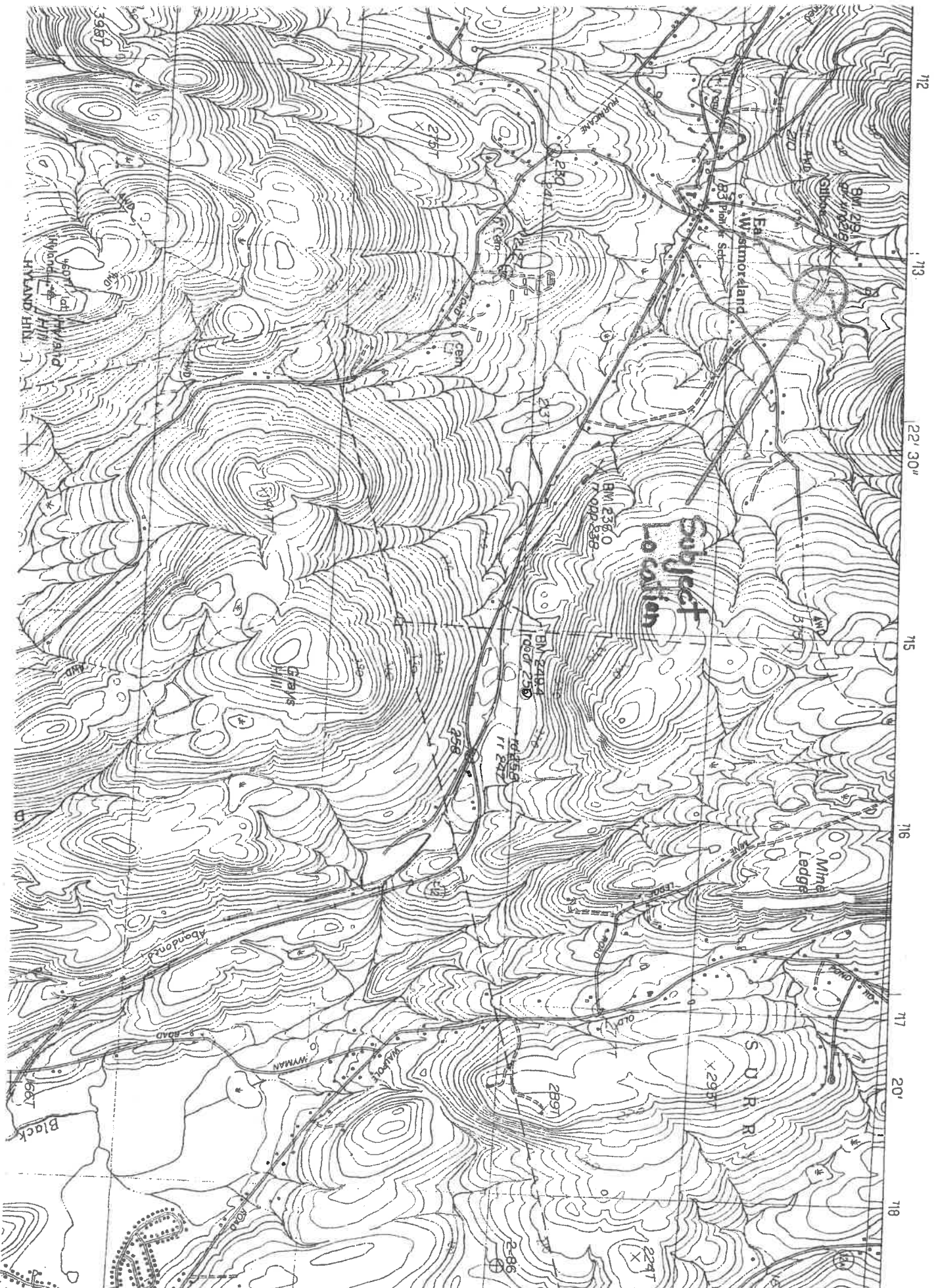


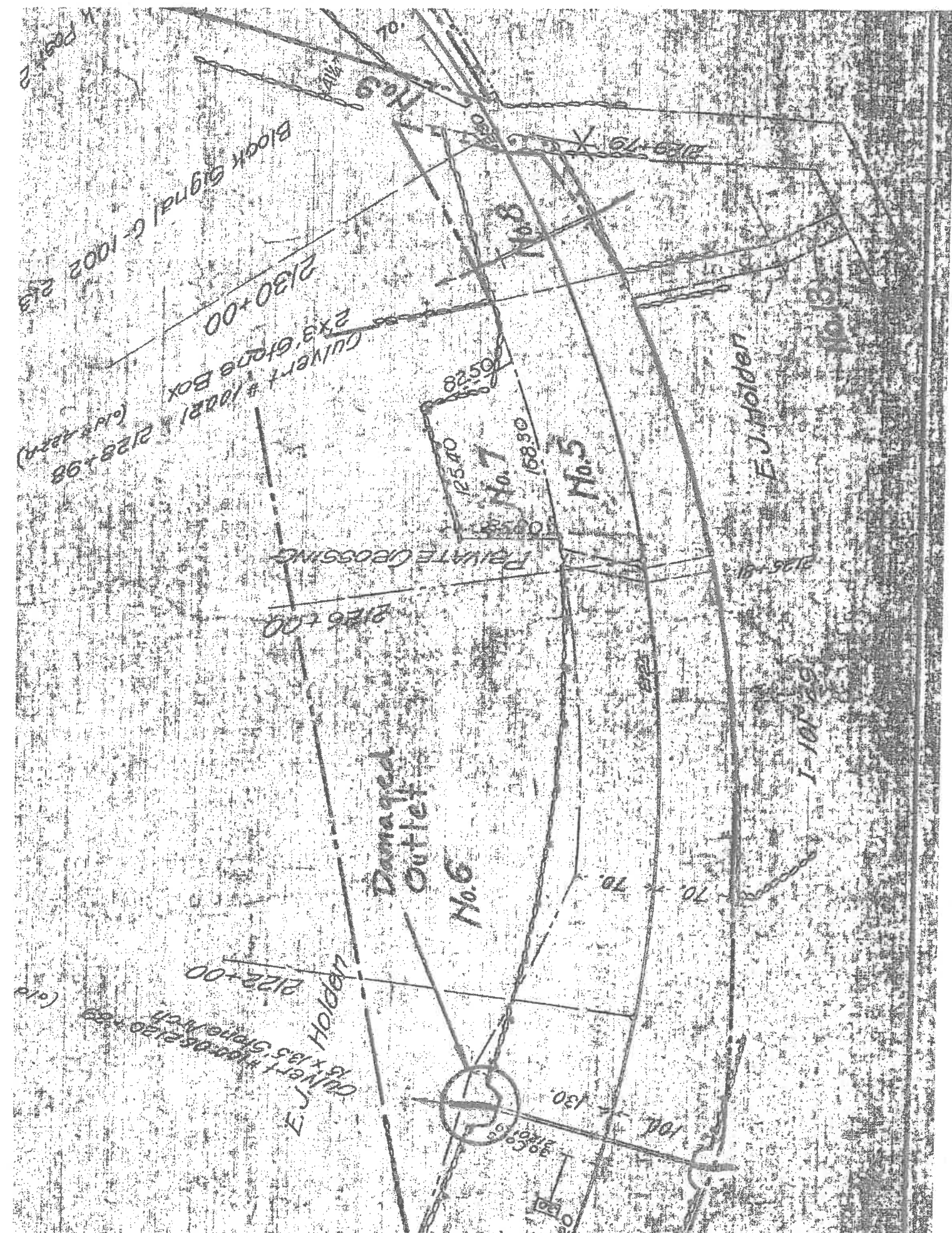
September 5, 2003 013 (2)



September 5, 2003 012 (2)







PLAN VIEW

Not to Scale

COLLAPSED GRANITE ARCH
WESTMORELAND, NH

MILL BROOK

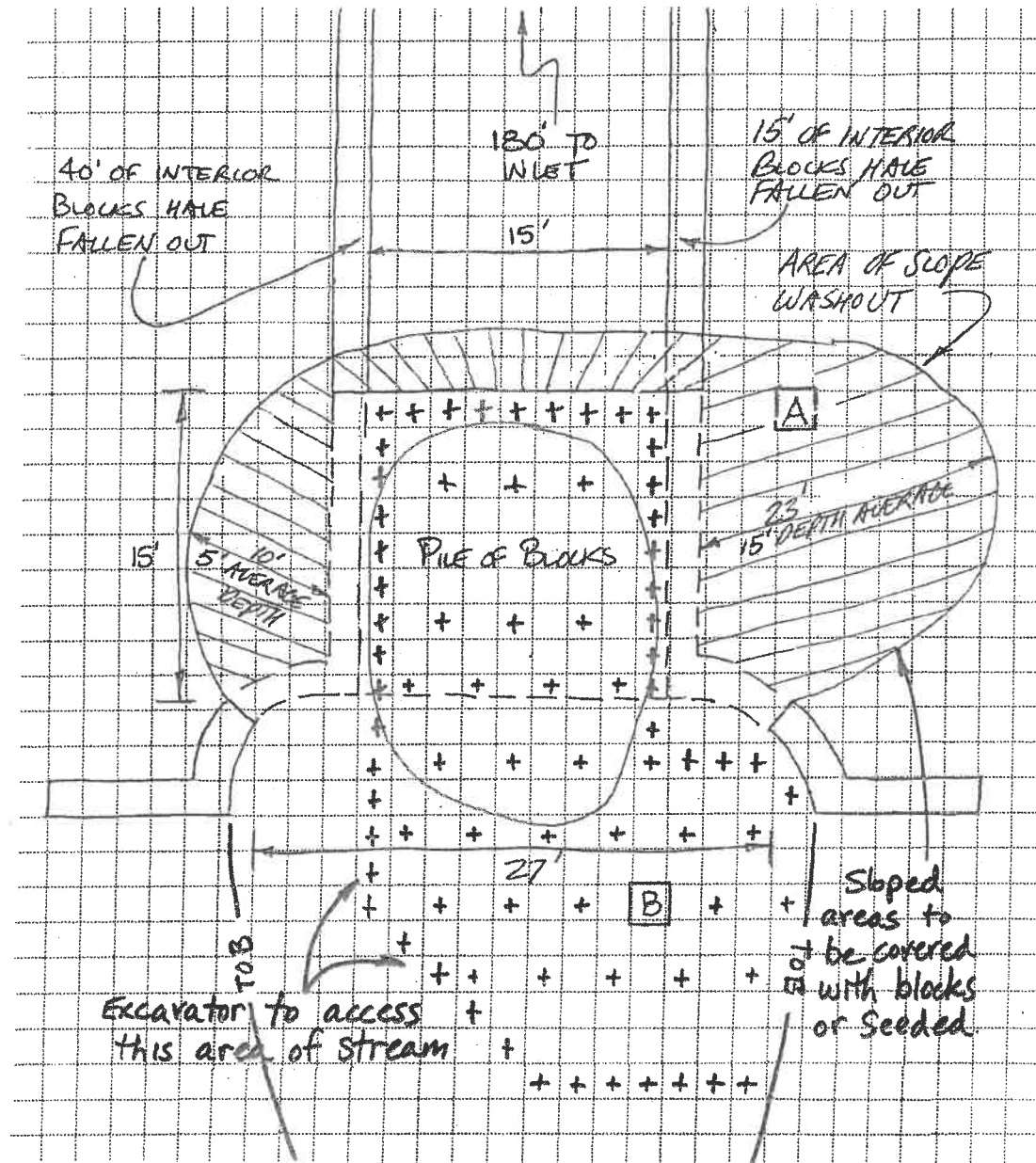
LEGEND

TYPE OF WETLAND IMPACT	PERMANENT IMPACT	WETLAND DESIGNATION NUMBER
N.H.V.B. (NON-WETLAND)		WETLAND IMPACT LOCATION
N.H.V.B. & A.C.O.E. (WETLAND)		WETLAND MITIGATION AREA
N.H.V.B. - NEW HAMPSHIRE WETLANDS BOARD A.C.O.E. - ARMY CORP. OF ENGINEERS		TEMPORARY IMPACTS
ORDINARY HIGH WATER	TOP OF BANK	MITIGATION
TIDAL BUFFER ZONE	TOP OF BANK & ORDINARY HIGH WATER	

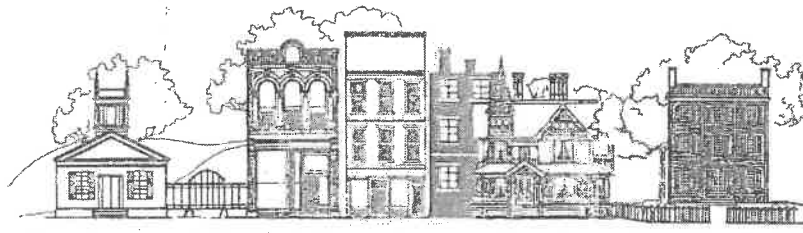
WETLAND DESIGNATION	USFWS WETLAND CLASSIFICATION	LOCATION	AREA (S.F.)		TEMPORARY IMPACTS
			N.H.V.B. (NON-WETLAND)	N.H.V.B. & A.C.O.E. (WETLAND)	
Bank Stream		A	700		500
		B			
		C			
		D			
		E			

PERMANENT IMPACTS: 700 S.F.
TEMPORARY IMPACTS: 500 S.F.

TOTAL IMPACTS: 1200 S.F.



Brian Lombard, PE
October 20, 2003



NEW HAMPSHIRE DIVISION OF HISTORICAL RESOURCES

State of New Hampshire, Department of Cultural Resources
19 Pillsbury Street, P.O. Box 2043, Concord, NH 03302-2043
TDD Access: Relay NH 1-800-735-2964
<http://webster.state.nh.us/nhdhr>

603-271-3483
603-271-3558
FAX 603-271-3433
preservation@nhdhr.state.nh.us

December 3, 2003

Gino Infascelli
Bureau of Rail & Transit
Six Hazen Drive
Concord, NH 03301

RE: Dredge & Fill Application- Westmoreland, #66021
Proposed Reconstruction of a Fallen Arch Culvert
Mill Brook, Westmoreland, NH

Dear Mr. Infascelli:

I am in receipt of your request for review on the above mentioned project. Please be advised that this rail line was assessed in 1996, prior to a developed Railroad Context. At that time it was determined that:

"The Cheshire Railroad is one of the 'most thoroughly-constructed lines in the country.' Its 7 stone arch bridges, 13 large box culverts, 120 smaller stone box culverts, 4 double box stone culverts and 4 granite block cattle underpasses of local granite have considerable historic and engineering significance which may make the line or these elements of the line eligible under Criteria A and C. To make a final determination, however, it would need to be evaluated against others, and, at this time we have produced a sufficient context to evaluate the Cheshire Line for National Register Eligibility."

Mr. Garvin has provided comments with regard to the removal or dispersal of the stone and the Division agrees that removal of the stone would constitute an adverse effect. The culvert has been damaged, and failure to reconstruct the collapsed vault and the headwall will ensure further erosion of the outfall end of the structure in future heavy flooding.

In order to avoid demolition by neglect, the vault needs to be rebuilt and the headwall reconstructed as it was originally designed. The wall was designed to serve a purpose and the Division is concerned that over time, with it's absence, what will happen to the rest of this very long culvert

If you have any questions about the assessment, please contact me at 271-2813. Any other questions please don't hesitate to get in touch with us.

Sincerely,

Edna Feighner
Review and Compliance Coordinator

Cc: ACOE
Dennis Danna, DOT, Bureau of Environment
Brian Lombard, Bureau of Rail & Transit

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BUREAU OF ENVIRONMENT

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NH DEPARTMENT OF
TRANSPORTATION

BUREAU OF ENVIRONMENT CONFERENCE REPORT

DATE OF CONFERENCE: December 17, 2003

LOCATION OF CONFERENCE: John O. Morton Building

ATTENDED BY:

NHDOT

Mark Hemmerlein
Charlie Hood
Chris Waszczuk
Kevin Nyhan
Bill Oldenburg
Marc Laurin
Keith Cota
Bill Cass
Mike Pillsbury
Ron Crickard
Bill Hauser
Trent Zanes
Den Danna
Bob Landry

**Federal Highway
Administration**
Bill O'Donnell

Army Corps of Engineers

Rich Roach
Frank DelGiudice

National Marine Fisheries Service

Mike Johnson
Marcy Scott
Lou Chiarella

EPA

Mark Kern

National Park Service
Margaret Watkins

NH Wetlands Bureau
Lori Sommer
Gino Infascelli
Carolyn Russell

**NH Fish and Game
Department**
Bill Ingham

**Office of Emergency
Management**
Tylor Young

VHB
Bill Barry

**Stratford Regional
Planning Commission**
Tim Roache

**Lamprey River Advisory
Committee**
Judith Spang

SUBJECT: Natural Resource Agency Meeting

Salem-Manchester, IM-IR-93-1(174)0, 10418C

B. Cass updated the group on the project. The FEIS, as well as the Special Committee report, will be finalized in early 2004. M. Kern inquired about the possibility of holding a public meeting to update the public on the salt issues. B. Cass responded that there will be general meetings in the corridor after approval is received from the Special Committee, but none specific to salt are planned. This issue will be thoroughly covered in the FEIS. B. O'Donnell stated that the Department will be working with UNH T² to train town operators, as well as salt issues being addressed in a different forums. B. Cass stated that the NPDES2 awareness and outreach process is also on-going. B. Barry, from VHB, provided a handout, which reviewed the sequential approach to mitigation that had been followed for the I-93 project whereby initially the highway alignment was shifted east or west to avoid wetlands or other critical resources. Following this alternative-design analysis, measures to minimize unavoidable impacts along the mainline as well as at the interchanges were also identified and incorporated into the preferred alternative's design. B. Barry

briefly reviewed the design options that minimized wetland impacts including additional alignment shifts, elimination of the bike path and use of retaining walls. The FEIS will commit to investigate, during the development of the final design, if any further steepening of embankments or additional retaining walls are appropriate. M. Laurin briefly discussed the most recent mitigation package and handed out location maps and aerials of the sites. He also indicated that additional preservation of parcels around Scobie Pond in Londonderry were being considered by the Department, to replace a parcel soon to be acquired by the Town Conservation Commission in the Musquash Swamp area. M. Kern asked that adjacent conservation lands be noted on these maps. L. Sommer mentioned that providing stewardship funding, usually a minimal one-time payment, to suitable stewardship entities (such as the Rockingham Conservation Group) would be appropriate for these large preservation sites. B. Cass stated that the Department will pursue this, and other options, to find the appropriate stewards for these lands after the lands are purchased, and will continue to consult with the Wetlands Bureau on this matter. F. Delgiudice stated that the Corps will soon be issuing a LEDPA for the project and that the mitigation package was appropriate. He asked if any of the resource agencies had any concerns regarding the mitigation package. There was consensus that the mitigation package was appropriate. Considerable discussion ensued.

B. Barry reviewed the compensatory flood storage measures that are being proposed to offset impacts on floodplains and to the flood flow alteration/storage values of wetlands. The estimated flood-storage replacement would be 155 to 161 acre-feet, which included specially created flood-storage areas and stormwater extended-detention basins along the highway as well as wetland creation at the mitigation sites. M. Kern pointed out that he didn't feel that flood storage outside the floodplain was a realistic substitute for impacts to the floodplain. B. Barry retorted that by storing water higher in the watershed there would be benefits in attenuating the amount of water which would contribute to any downstream flooding event.

B. Barry also reviewed how Essential Fish Habitat had been addressed for the three tributary streams to the Merrimack River. L. Chiarella from the National Marine Fisheries Service recommended that the EFH assessment should use the Service's current form for this assessment and that it would be forwarded to VHB by email. He stated that the emphasis for this project should be on maintaining and improving water quality, and that BMPs are appropriately used during construction. F. Delgiudice stated that as there are no existing water quality measures, the upgrade of the highway, which includes the construction of extended detention basins and swales along the entire corridor, should improve water quality.

Hillsborough, F-012-1(35), 10440

This project involved construction of the NH Route 9 / US Route 202 bypass. Mr. Roach previously requested that replacement wetland mitigation be provided to compensate for the elimination of wetland creation at Site 18A. The Department proposed that five abutting surplus parcels of land (hearing plan #'s 16,17,18,19 & 25) totaling nine acres and located at the western terminus of the bypass be preserved in lieu of creation at site 18A. These parcels will be under pressure for future development and currently possess ecological value. It was agreed by the group that the preservation of these parcels is appropriate mitigation and completes the mitigation package for the subject project.

Alton, 13802

Kevin Nyhan described the proposed project, which involves the replacement of the bridge that carries NH Route 28 over the Merrymeeting River in Alton. The project was reviewed at the June 18, 2003 Natural Resource Agency Meeting, where NHF&G requested that the Department

look into an alternative that had “no net loss” of wetlands. This portion of the Merrymeeting River is included in a NHF&G wildlife management area. In addition to the “no net loss” option, the Department presented three other alternatives. They included an upstream replacement, a downstream replacement and an on-alignment replacement. At the June meeting it was determined that the natural resource impacts that would be associated with an upstream replacement would be too great. Therefore it was dismissed, and the Department has focused its attention on the remaining alternatives.

The Average Daily Traffic (ADT) on this section of roadway is approximately 11,000 vehicles per day during the summer. As such, phased construction on-alignment is not possible. no matter what alternative is selected, an additional bridge over the river will be required for temporary use during construction.

Trent Zanes stated that the Department currently has two (2) viable alternatives.

- The first alternative involves replacing the bridge on-alignment with a downstream detour bridge. This alternative would involve 1,985 square feet of temporary impacts, and approximately 10,600 square feet of permanent impacts.
- The second alternative involves constructing a new bridge downstream of the existing one. This alternative has more wetland impacts (4,049 square feet of permanent impact). In an effort to try to mitigate the impacts, there would be approximately 2,405 square feet of mitigation associated with the removal of fill from the old bridge.

The Department’s first attempt at each design resulted in approximately 6,900 square feet of permanent impact associated with the on-alignment alternative, and approximately 11,000 square feet of impacts with the downstream alternative. The reduction in impacts was the result of extending the U-back wing walls, reducing the footprint of fill required around the structure.

The on-alignment alternative is the one that the Department prefers at this point due to the minimized wetland impacts in conjunction with the better sight distance and improved geometry associated with it. The construction costs for the two (2) alternatives are approximately \$680,000.00 for the on-alignment alternative, and \$560,000.00 for the downstream alignment. The Department was unable to achieve “no net loss” due to height of the structure that would be required. Additionally, a “no net loss” structure would cost approximately \$1,750,000.00.

K. Nyhan stated that the temporary impacts associated with the on-alignment alternative are associated with the construction of a temporary bridge. R. Roach concurred that the Department proceed with the on-alignment alternative. No one in attendance requested mitigation for this project.

Westmoreland, X-A000(206), 14109

Kevin Nyhan began the presentation by describing the proposed project, which involves permanent fixes to several emergency repairs conducted during the summer of 2003. During the month of August, two separate storms dumped as much as 4-5” of rain each in a one-hour time period on western NH. Subsequently, Mill Brook rose and washed out portions of NH Route 12 and NH Route 63 in Westmoreland.

Emergency repairs consisted of stabilizing the eroded bank of Mill Brook on NH Route 12. Stone was placed, in many instances on a nearly vertical face and in running water to halt further erosion. This stone was not keyed and there is no geotextile matting behind it for structural support. Six bridges along both corridors still require some level of stabilization, re-armoring. K. Nyhan stressed that the emergency repairs have already been completed under an emergency authorization issued by the DES Wetlands Bureau. The permit application that will be requested for the permanent fixes proposed as part of this project, will be under an "after-the-fact" application to fulfill requirements of Part Wt 503 of the Wetlands Bureau Administrative Rules. The existing repairs are only temporary and will suffice for the winter. It is not however, a long-term solution.

Chris Carucci discussed the proposed roadway improvements. The main reason that NH Route 12 washed out during the high precipitation events was due to the capacity of the culvert that carries Beaver Brook under the roadway to its outlet at Mill Brook. Beaver Brook overtopped the roadway, opening up the slope, while Mill Brook eroded the bank further and carried the debris downstream. Maintenance District 4 forces placed the stabilization stones along approximately 2,500 linear feet of bank, backfilled with bank run sand and gravel and reestablish the pavement. The toe-of-slope was placed closer to the roadway than the existing stream channel. To permanently secure the bank, the proposed project will remove the rock that District 4 placed, key it into the channel and place it back on a 1.5/1 slope. The toe of the proposed channel will be approximately 5'-6' further away from the roadway than the emergency repair. In lieu of the stone, the Department considered constructing a concrete retaining wall at this location, however due to the minor encroachment on the stream channel, the cost and environmental considerations, stone is being proposed. The jersey barrier erected to protect motorists will be replaced with standard beam guardrail. K. Nyhan stated that along NH Route 12 the vast majority of the jurisdictional impacts will be bank impacts, although there will be channel impacts due to the keying in of stone at the 1.5/1 slope. The preliminary estimate of bank impacts along Mill Brook on NH Route 12 is 0.5-0.75 acre.

Lou Chiraella asked what the channel impacts would be to key in the new stone. C. Carucci stated that the streambed is gravelly, and design is awaiting a geotechnical analysis to determine the exact stone treatments and footprint impact. In all areas the new stone would not be encroaching that much on the streambed. There are areas where the ordinary high water line is further away from the scoured stream channel so there would be no great impact on the channel in certain areas. Rich Roach requested that the proposed stream channel cross section be similar to that above and below the work area to keep it as natural as possible. Wayne Clifford responded that the proposed stream channel is similar to that above and below. During periods of low water the stream is very shallow, and the proposed embankment stabilization will be very close to where it was before the precipitation events.

The Route 63 location experienced a similar situation in that the corrugated metal cross pipe that carries an unnamed perennial stream tributary to Partridge Brook under the roadway was not of sufficient capacity to pass the flowage. It was able to pass approximately the 1-year storm event. The proposed structure at this location will be designed to pass the 25-year, or 40-year storm event. The current channel alignment is not conducive to pass the flow, therefore the proposed structure will be slightly further to the north and at a skew to better align the upstream and downstream portions. Additionally, an old culvert that carries this stream under a drive will also be replaced and upsized to pass the 25-year, or 40-year storm event.

K. Nyhan stated that the original design called for a completely redesigned stream channel downstream of the crossing to completely pass the design storm. However, further investigation

into the hydraulics indicates that under the proposed design the small floodplain on the west side of the roadway can be used to contain the flooding. The Bureau of Right-of-Way is still looking into the right-of-way needs in the area.

Bob Aubrey stated that there are several bridges along both portions of roadway that will require some level of re-armoring. The first bridge (#109/124) has some undermining of the wing walls due to the deposition of material at the northeast quadrant of the bridge forcing water to flow under it at a skew angle. The Department may need to place stone at both the upstream and downstream wings. The second bridge (#167/122) built in the 1940's-1950's underwent significant scour during the rain events. The landowner built a large berm along the downstream bank. The Department proposes to armor the wing walls. The third structure (#163/129) is just to the west along NH Route 12. Due to a relocation of the channel at some point in the past, water approaching the bridge is at a skew to the structure, causing some scour and approximately 1'-1.5' of one footing is exposed. The Department proposes to re-arm it with stone. The fourth bridge (#145/131), just to the west is a three span structure. Approximately 2' of the footing of the pier nose is exposed and requires re-armoring with stone. Additionally, one of the upstream wings is exposed. The last bridge (#125/122) further to the west along NH Route 12 similarly requires armoring at the wings.

The advertising date for this project is currently May of 2004. In total the wetland impacts are approximately 1.25 acres of permanent impacts. A permit application will be submitted shortly. R. Roach indicated that this project would qualify for a State Programmatic General Permit.

Durham-Newmarket, STP-TE-X-5133(009), 13080

J. Butler described the project, which is located along NH Route 108 in the towns of Durham and Newmarket. The project begins a few hundred feet south of the bridge over the Oyster River in Durham, and extends southerly approximately 3.5 miles to the bridge over the Lamprey River in Newmarket. The primary intent of the project is to add 4-foot shoulders to improve bicycle safety, with other safety improvements including drainage and guardrail upgrades. Additionally, there are several intersections within the corridor that will be improved. Largely, the project will maintain the existing alignment and profile.

Proceeding south from the Oyster River Bridge along NH Route 108, the project will maintain the existing 'Y' intersection at Durham Point Road, with a left turn lane or bypass shoulder along NH Route 108 being considered at this location. Further south, the only bridge in the project area consists of a 10'-12' concrete span over Longmarsh Brook (Hammel Brook). The bridge is already wide enough to accommodate the proposed 4-foot shoulders. At the intersection of Bennett Road several alternatives are being considered to improve the intersection and reduce the abrupt crest on Bennett Road. South of this location is a 0.75-mile section of roadway commonly referred to as the "flats." This is an area dominated by wetlands on each side of the roadway. South of the "flats," a left turn lane or bypass shoulder is proposed at the Stagecoach Road intersection. In Newmarket, curbing and sidewalks are proposed on both sides of NH Route 108. The project terminates just north of the bridge over the Lamprey River in the downtown area of Newmarket.

The 0.75-mile "flats" is not only flat, it is also approximately 1.5 feet below the 100-year flood elevation. District 6 Maintenance personnel indicate that periodically (once every several years) the water table rises enough to flood the roadway, causing a closure. It is not a destructive event, but more of a bathtub-type ponding event. The "flats" are also a transition spot for two (2) watersheds (Lamprey River to the south and Oyster River to the north). During flood events the

waters commingle. The Department will not be changing the profile of the roadway in this location to bring it above the 100-year flood elevation as the potential to cause upstream/downstream damage in other areas is too great.

At the Longmarsh Brook bridge the roadway is similarly within the 100-year floodplain. Similar to the "flats," the roadway is occasionally overtopped by water at this location. As noted above, the roadway profile will not be changed in this location due to the potential change in flooding characteristics that would result. The bridge is wide enough to accommodate the 4-foot shoulders and is in good structural condition. Therefore, there is no substantial work proposed on the structure.

There are several historic properties and currently two (2) identified Historic Districts within the limits of this project: one (1) District is in Durham, beginning south of the Durham Point Road intersection and extending north, and one (1) District is in Newmarket in the vicinity of downtown. In addition to interspersed, individually-eligible properties, there is a potential Agricultural Historic District in the vicinity of the NH Route 108/Bennett Road intersection. B. O'Donnell asked if there would be any use of historic parcels. J. Butler stated that it is possible that there would be right-of-way acquired in the vicinity of Bennett Road, and there will probably be easements at other historic parcels. K. Nyhan added that the potential District at Bennett Road has potentially eligible parcels on both sides of the roadway. From a Section 4(f) standpoint, construction of shoulders on either side of the roadway would have an impact.

Wetland impacts, based on the design to date, are approximately 1.0 acre. Most of those impacts would be incurred in the area of the "flats." Most impacts are associated with a strip of additional fill that is required to accommodate the widening of the roadway. There are two (2) wetland areas where the Department proposes to construct 2:1 side slopes and construct guardrail (versus the typical treatment of construction of 4:1 slopes with no guardrail). This design consideration minimized the impacts by approximately 0.2 to 0.3 acre (accounted for in the 1.0 acre total). Approximately 40% of the impacts will be in the Lamprey River watershed, 25% in the Oyster River watershed, and approximately 35% in the area of watershed commingling.

K. Nyhan provided photographs of typical wetlands throughout the project area. He then discussed mitigation options the Department is considering. Currently, there is a substantial amount of Japanese Knotweed along the roadway corridor in the area of the "flats." One mitigation option is to remove it. Secondly, the Department is looking at land conservation opportunities in the vicinity of the project area. Based on maps in GRANIT, there is a fair amount of land already in conservation use, and recently the 19 NH coastal communities developed a manual of additional conservation opportunities. The Department is reviewing this document to determine if any would be appropriate for this project.

During the summer of 2003, the Department conducted a field review of the project area with Margaret Watkins of the Lamprey River LAC/National Park Service; Dave Carroll, turtle expert; and Eric Orff, NH Fish & Game Wildlife Biologist, to review the scope-of-work and discuss potential mitigation options. Special attention was paid to ways to decrease turtle mortality. The "flats" are an area identified as good Blanding's Turtle habitat, and there has been some history of turtles crossing the roadway. Potential options proposed by the experts at this onsite meeting to decrease turtle mortality included:

- Creating alternative nesting sites away from the existing roadway. Ideally, these sites would be 0.25-miles from the roadway, but as far away as possible would also be beneficial,

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NHDHR INVENTORY #WES0006

Name, Location, Ownership

1. Historic name East Westmoreland Stone Arch Culvert
2. District or area Cheshire Railroad
3. Street and number _____
4. City or town East Westmoreland
5. County Cheshire
6. Current owner State of New Hampshire

Function or Use

7. Current use(s) Transportation: pedestrian-related
8. Historic use(s) Transportation: rail-related

Architectural Information

9. Style --
10. Architect/builder --
11. Source research
12. Construction date c. 1848
13. Source research
14. Alterations, with dates _____

15. Moved? no ☒ yes ☐ date: _____

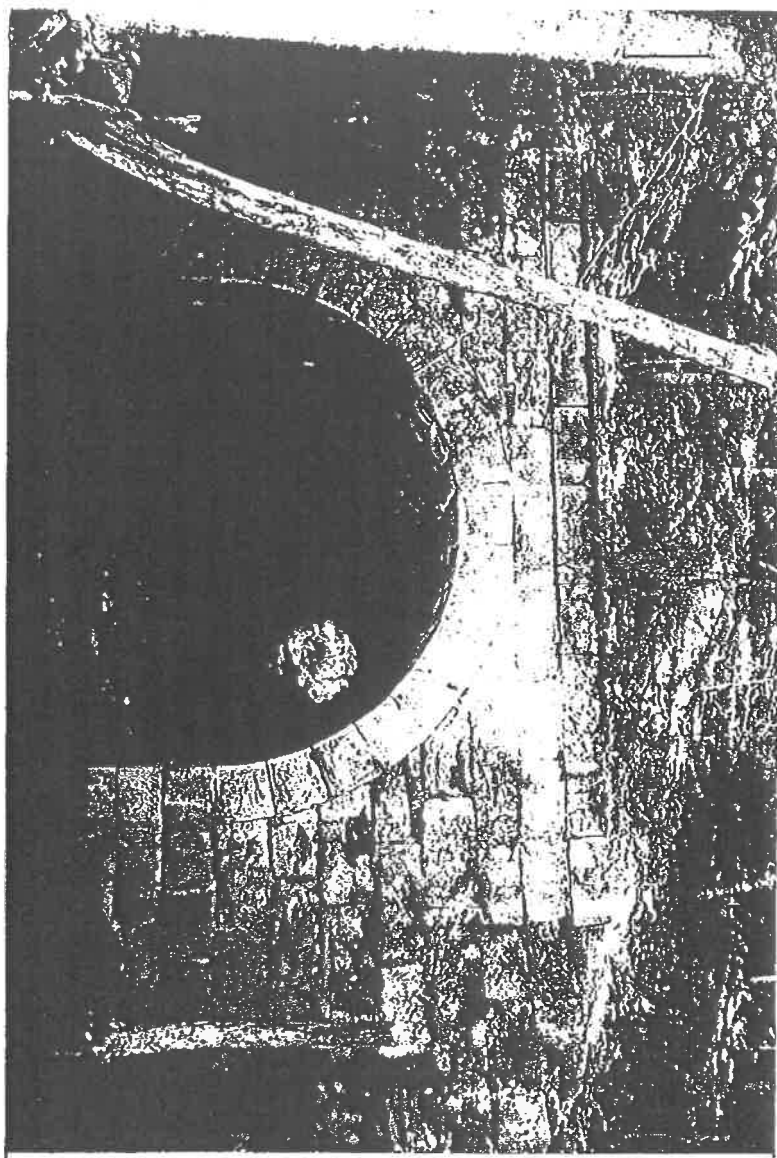
Exterior Features

16. Foundation granite
17. Cladding --
18. Roof material --
19. Chimney material --
20. Type of roof --
21. Chimney location --
22. Number of stories --
23. Entry location --
24. Windows --

- Replacement? no ☐ yes ☐ date: _____

Site Features

25. Setting Other: abandoned railroad bed converted to recreational use, over a river
26. Outbuildings --



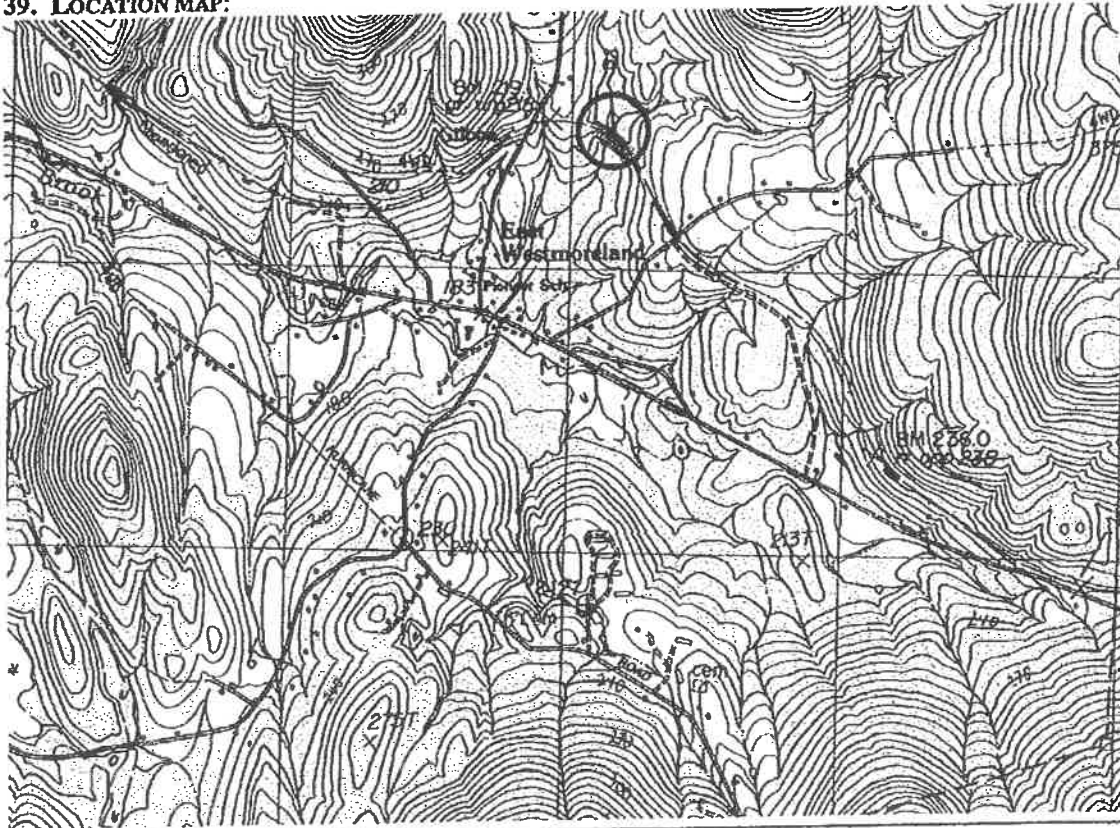
35. Photo #1 _____ 36. Date 30 Jul 2008
37. Roll # 1 Frame # 35 Direction: SW
38. Negative stored at: NHDOT

27. Landscape features Pond, river, or stream
28. Acreage _____
29. Tax map/parcel # _____
30. UTM reference 18 0713146E 4763484N
31. USGS quadrangle and scale Keene 1:25,000
Form prepared by
32. Name Sarah LeVaun Gaulty
33. Organization NH Department of Transportation
34. Date of survey July 30, 2008

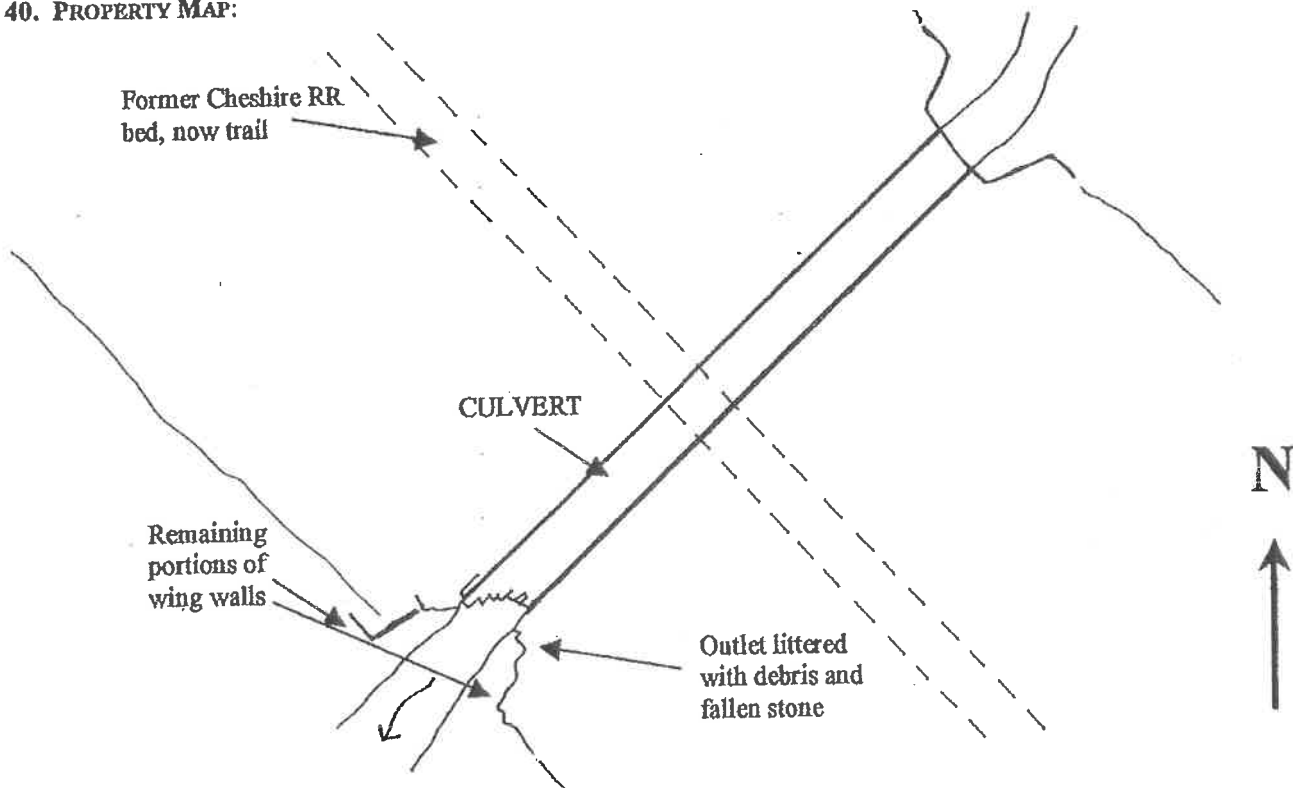
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39. LOCATION MAP:



40. PROPERTY MAP:



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41. Historical Background and Role in the Town or City's Development:

Note: Significant portions of this form's narrative were written by James L. Garvin, New Hampshire Division of Historical Resources.

The East Westmoreland Stone Arch Culvert, located at mile marker 100.06, is one of many impressive engineering structures on the line of the former Cheshire Railroad. Extending 42.81 miles from the Massachusetts border at Fitzwilliam to a point near the Vermont border at North Walpole, the Cheshire Railroad was chartered in 1844.¹ It completed its passage across Cheshire County to the Connecticut River and to its terminus at Bellows Falls, Vermont, in 1849.² The Cheshire Railroad was characterized as "one of the most thoroughly-constructed roads in the country. Its bridges, culverts and abutments, built of cut granite, are models of civil engineering."³

The Cheshire Railroad surpassed all other rail lines in New Hampshire in its mastery of masonry construction and in the bold use of the stone arch for its many stream crossings. Chief engineers for the line were Lucian Tilton and W. S. Whitwell. Under their supervision, contractors built twenty arched granite bridges and culverts, more than a hundred stone box culverts and cattle underpasses, and impressive cuts and fills along the 43-mile route.⁴ Some of the line's culverts support over a hundred feet of overburden. Several of the stone arched bridges on the line are elliptical in outline; others are high, stilted semicircular arches. An arched highway underpass on Arch Street in the western part of Keene has in-curved portals, and the intersection of the semicircular vault and the portals represents complex geometry that required difficult stonecutting. The Arch Street underpass is accompanied by a long arched culvert that conducts nearby White Brook beneath the wide causeway of the railroad.

The Cheshire Railroad had its genesis in plans by Massachusetts investors to build a rail line from Boston to the Massachusetts town of Fitchburg, about forty-one miles southeast of Keene, with further discussions of extending the line from Fitchburg to Brattleboro, Vermont. Seeing an opportunity to attract a line through Keene, local investors subscribed some \$40,000 in December, 1843, to influence the engineers to choose a route that would pass through Keene en route from Fitchburg to Brattleboro.

When such a route was ultimately not selected, local rail proponents secured a charter for the Cheshire Railroad on December 17, 1844. The charter authorized the corporation to construct a line "from any point on the south [boundary] line of the State [of New Hampshire], in Fitzwilliam or Rindge, and passing thence through the village of Keene, to the western boundary of the State, in Walpole or Charlestown," and further authorized the

¹ *By-Laws and Act of Incorporation of the Cheshire Railroad Company and General Railroad Laws* (Keene, N. H.: Printed by H. A. Bill, 1845).

² *Thirty-Fifth Annual Report of the Railroad Commissioners of the State of New Hampshire, 1879* (Manchester, N. H.: John B. Clarke, 1879), pp. 107-110.

³ D. Hamilton Hurd, ed., *History of Cheshire and Sullivan Counties, New Hampshire* (Philadelphia: J. W. Lewis & Company, 1886), p. 21.

⁴ The Cheshire Railroad Area Form, written by Elizabeth J. Hostutler, states on page 2 that "the Cheshire Railroad is singular in the state for its high number of granite bridges and culverts, for their quality of construction, and for their survival. Seven stone arch bridges and thirteen large stone arch culverts are located along the 42.75 miles of track in New Hampshire, along with approximately 120 stone box culverts, four double box stone culverts, and four granite block cattle underpasses. Much of the credit for this stonework can be given to Lucian Tilton and W. S. Whitwell, chief engineers during construction, and the presence of local granite, sometimes within half a mile of the rail bed (Keene History 1968:288). Of particular note is the Tilton-design stone arch bridge over the South Branch of the Ashuelot River in Keene, built with granite from a quarry on the nearby Thompson Farm (Keene History 1968:288). Considered one of the finest examples in the country at its construction in 1849, the bridge is sixty feet high with a 90 foot span (Keene History 1968:395)."

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corporation to build a bridge across the Connecticut River to connect with Rockingham, Vermont.⁵ A second New Hampshire law, passed on December 27, 1844, authorized the Cheshire Railroad to "unite with the Winchendon [Massachusetts] railroad corporation . . . and when said corporations shall have united . . . under the name of the Cheshire railroad company . . . all the franchises, property, powers and privileges granted and acquired under the authority of the states of New Hampshire and Massachusetts respectively, shall be held and enjoyed by all the said stockholders, in proportion to the amount of property or interest held by them respectively, in either or both of said companies or corporations."⁶

By this means, the Cheshire Railroad secured authority to connect Winchendon, Massachusetts, and Rockingham, Vermont, by rail. Further action by the Massachusetts legislature authorized construction of six miles of track connecting Winchendon and Fitchburg, Massachusetts, thereby making legal a complete rail route passing through Keene from Boston to the Connecticut River at Walpole, New Hampshire, and Rockingham, Vermont.⁷ By May, 1848, when the line had become active between Boston and Keene, the directors of the Cheshire Railroad reported to the stockholders that great prospects were to be expected in the near future by completion of an integrated transportation system covering northwestern New England and linking that region with Boston:

The time has past, if it ever existed, when the final completion of the road could be regarded by any one as questionable. It is now only a question of a few weeks, in point of time,—earlier or later. But still, in this point of view, important to us,—important that we shall be realizing at the earliest day, the advantages which we shall derive from the use of our entire line,—important to us, that we shall be ready as soon as the other roads constructing above us shall be completed, to receive their business and to pass it along to its destination; with the Rutland, the Sullivan, the Central, the Passumpsic, the Vermont and Canada, and the Ogdensburg roads,—all passing on to completion, and in the business of all of which our road must participate, in a greater or less degree,—we can want no incentive to urge us on our work, and can entertain no distrust, that when the road shall be completed, the amount of business which shall be done on it will exceed any expectations which have been entertained by its most sanguine friends.⁸

The Cheshire Railroad was officially abandoned along most of its length in 1972.⁹ In the early 1990s, the New Hampshire Department of Transportation purchased approximately forty linear miles of the railroad in the towns and cities of Fitzwilliam, Troy, Marlborough, Swanzey, Keene, Surry, Westmoreland, and Walpole. In keeping with standard practice, this linear corridor was placed under the administrative care of DOT's Bureau of Rail and Transit. The Bureau of Rail and Transit, in turn, has permitted the use of much of the line as a recreational trail under the Trails Bureau of the Department of Resources and Economic Development (DRED).

⁵ *By-Laws and Act of Incorporation of the Cheshire Railroad Company and General Railroad Laws* (Keene, N. H.: Printed by H. A. Bill, 1845).

⁶ *Ibid.*

⁷ *First Annual Report of the Directors of the Cheshire Railroad Company, to the Corporation* (Keene, N. H.: J. & J. W. Prentiss, 1846).

⁸ *Third Annual Report of the Directors of the Cheshire Railroad Company, to the Corporation* (Keene, N. H.: J. & J. W. Prentiss, 1848).

⁹ Robert M. Lindsell, *The Rail Lines of Northern New England* (Pepperell, Mass.: Branch Line Press, 2000), pp. 60-63.

INDIVIDUAL INVENTORY FORM**NHDHR INVENTORY #WES0006****42. Applicable NHDHR Historic Contexts:**

The Railroads in New Hampshire, 1842-1960
Engineering in New Hampshire, 1623-present

43. Architectural Description and Comparative Evaluation:

The East Westmoreland Stove Arch Culvert is one of several granite arched culverts built to conduct local streams through the causeways of the rail bed at points where the elevation of the rails was far above that of the streams below. According to a 1994 New Hampshire DOT Cheshire Railroad Area Form, the rail bed surface is at a height of 57'2" above the stone arch culvert. As a result of the extreme height, this and other similar Cheshire Railroad culverts are enormously long and the causeways are proportionately wide at their bases.

The East Westmoreland Stove Arch Culvert carries the Cheshire Railroad, which travels northwest-to-southeast, over an unnamed southwesterly-flowing stream. The culvert is composed of a single barrel vault that extends approximately 176' feet from spandrel wall to spandrel wall over a natural sediment floor. The curved wing walls add 9' of length to the structure upstream and 13' downstream for a total culvert length of approximately 198'. The width of the culvert's barrel is approximately 14'6" throughout at its widest point. The culvert opening measures 10'10" high upstream at the center of the arch and approximately 13' high downstream. The outlet was badly damaged during a 2005 flood event and continues to deteriorate, therefore the downstream measurement had to be approximated from the intact portions of the portal.

The culvert is built of rough-faced granite ashlar with precisely hammered beds that required only a minimum amount of mortar to achieve full bearing for each stone. In many cases, the stones were apparently laid dry. The exposed surfaces are left with split faces, imparting a rusticated texture to the overall fabric, particularly at the exterior walls. Many of the stones throughout the culvert retain visible marks of the plug and feather drills that were used to prepare them for splitting. The stones that compose the culvert vary in size from 2'3"x2'x1'9" up to 6'5"x1'6"x2'1". Small quarry hoist measuring 1" in diameter and larger holes measuring 2.5" are visible on fallen culvert stones at the stream outlet.

On the intact upstream end, the culvert is characterized by a large, semi-circular stone arch. The arch springs from a point two courses above ground level, and is outlined by granite voussiors that culminate in a flush central keystone. Two courses of stones rest above the arched opening, the uppermost projecting slightly to form a crown at the top of the spandrel wall. The courses of the spandrels and the piers are aligned and extend out into curved, stepped granite wing walls that buttress the arch. Despite major deterioration that has caused the failure of the piers and spandrel walls at the downstream end, portions of the curved wing walls remain intact.

Inside the barrel of the culvert, the corridor is lined with coursed ashlar granite. The lowest course rests on a ledge of tow blocks that projects slightly beyond the plane of the rising walls. As mentioned above, the East Westmoreland Stove Arch Culvert was damaged in a 2005 flood event, and evidence of continued deterioration is visible within the culvert. Toward the downstream end, the stream channel is starting to undermine the toe blocks inside the arch and several of these blocks have fallen out. In addition, an area of the north barrel wall is bulging near the outlet, and a number of large blocks have dislodged from the wall and landed in the stream below.

The damage at the downstream portal is extreme. Although the arched barrel shape remains, the voussiors, piers, and spandrels have fallen away, and granite blocks lie in the stream and on the adjacent banks. The

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exterior of the eroded arch appears stepped from the uneven end of the ashlar courses that became exposed when the portal was washed away. Flooding massively eroded the sloped land above the culvert and significant portions of earth are missing.

Comparative Evaluation

As noted above, the Cheshire Railroad surpassed all others in New Hampshire, and probably in northern New England, in the quality of its granite construction. The route of the railroad throughout Cheshire Country affords many other examples of arched granite bridges and culverts that may be juxtaposed with the stone arch culvert in East Westmoreland. Among the most impressive of these structures are the elliptical and semicircular vaults to be seen along the line, including the long granite arched culverts like the East Westmoreland Stone Arch Culvert. However, field visits to these structures along the former Cheshire Railroad were beyond the scope of this investigation.

In 1994, the New Hampshire DOT completed an Area Form for the Cheshire Line and found thirteen surviving stone arch culverts, along with seven stone arch bridges, 120 stone box culverts, four double stone box culverts, and four granite block cattle underpasses. Comparable railroad-related stone arch culverts still exist along the former Cheshire Railroad line today, though documentation for these resources was not available for comparison purposes. Among the notable documented arched granite structures along the line are the following: 1. The stone arch bridge (89.41 mm) in South Keene. No other arched bridge, on the Cheshire Railroad or elsewhere, equaled the bridge at South Keene for sheer height, span, and massiveness of construction until the approach of the twentieth century; 2. The stone arch highway underpass (94.57 mm) at Arch Street, Keene. The inwardly-curving portals of this bridge meet the stilted semicircular vault of the underpass in an intersection of complex geometry; 3. The stone arch highway underpass (85.45 mm) at Thatcher Hill Road in Marlborough. This high, stilted semicircular arch has straight portals but sharply outwardly-curved wing walls; 4. The semi-elliptical stone arch (83.24 mm) over the Ashuelot River at Troy; 5. The three-centered stone arch bridge (73.32 ± mm) over Scott Brook in Fitzwilliam; and 6. The double elliptical stone-arched bridge (71.08 ± mm) over an unnamed brook in Fitzwilliam.

Many of the attributes of the East Westmoreland Stone Arch Culvert were echoed on other spans of the Cheshire Railroad, both larger and smaller. Among these characteristics are the use of rough-faced ashlar masonry with precisely cut beds and arises, the employment of curved granite wing walls to buttress the arches, and a general sophistication of geometrical layout and proportioning. Together, these attributes offer a convincing visual impression of unstinting investment of thought and capital in the design and construction of the entire Cheshire Railroad line.

44. National or State Register Criteria Statement of Significance:

The East Westmoreland Stone Arch Culvert is individually eligible for the National Register.

Criterion A: The East Westmoreland Stone Arch Culvert is significant under this criterion for its role as a crucial link in a specific transportation system, the Cheshire Railroad. Writing in 1886, D. Hamilton Hurd claimed, "No event in the history of Cheshire County has resulted in such substantial benefit to its inhabitants as the construction of the Cheshire Railroad."¹⁰ Small towns along the route transported industrial and

¹⁰ D. Hamilton Hurd, ed., *History of Cheshire and Sullivan Counties, New Hampshire* (Philadelphia: J. W. Lewis & Company, 1886), p. 20.

INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #WES0006

agricultural products to and from markets throughout the region. The Cheshire Railroad is assumed eligible for the National Register, though the final determination of eligibility is incomplete pending more information.

- Criterion B: As an individual entity, there are no known significant persons associated with the East Westmoreland Stone Arch Culvert that would make the structure eligible under Criterion B.
- Criterion C: The culvert is significant under Criterion C for its significance in engineering and as the work of a master. It is individually eligible for the National Register as an outstanding example of a stone arch railroad culvert. Although several railroad-related stone arch culverts are extant along other rail lines in New Hampshire, including on the Northern Railroad at mile marker 83.25 (Cole's Brook) and 85.91 (Glines Brook), they lack both the scale and refined design of the East Westmoreland Stone Arch Culvert and other Cheshire Railroad culverts. Structures along the Cheshire Railroad were engineered to span the irregular landscape of Cheshire County, thereby resulting in elegant, highly developed, large-scale forms unique in New Hampshire.

The engineering design for the Cheshire Railroad was provided by W. S. Whitwell and Lucian Tilton.¹¹ A native of Hampton Falls, New Hampshire, Tilton (1812-1877) is credited with surveying the route of the Cheshire Railroad. He served as superintendent of the railroad upon its completion.¹² Tilton later served as consulting engineer for the Ashuelot Railroad, which connected Keene and East Northfield, Massachusetts, and was employed as superintendent of the Fitchburg Railroad in Massachusetts from 1850 to 1853.¹³ He subsequently served as superintendent of the Toledo and Wabash Railroad and as president of the Great Western Railroad; in the latter position, he and his family rented the home of the Abraham Lincoln family in Springfield, Illinois, when the Lincoln's left for Washington, D. C., in January 1861. Tilton moved to Chicago in 1869, and his house there was destroyed two years later in the great Chicago fire of October 8, 1871.¹⁴ He was considered one of the most eminent railroad engineers in the United States.¹⁵

- Criterion D: The East Westmoreland Stone Arch Culvert is not eligible under this criterion as there is no expectation of any archaeological remains at this location that may yield important information to contribute to an understanding of human history or prehistory.

¹¹ *First Annual Report of the Directors of the Cheshire Railroad Company, to the Corporation* (Keene, N. H.: J. & J. W. Prentiss, 1846).

¹² Tilton's place and date of birth are supplied in an article by David Proper, "Lincoln never did stay here, but Keene man rented his home," *The Keene Sentinel*, February 11, 2003. The United States Census of 1850 listed Tilton as a resident of Keene, "age forty." His death date of March 19, 1877, in Chicago, is given in the *Cheshire Republican* (Keene, N. H.) for March 31, 1877.

¹³ David Proper, "Lincoln never did stay here, but Keene man rented his home," *The Keene Sentinel*, February 11, 2003.

¹⁴ National Park Service, website for "Lincoln Home National Historic Site: The Lincolns in Springfield, 1849-1861."

¹⁵ *The Repertory* (Keene, N. H., 1924-25), p. 189.

INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #WES0006

45. Period of Significance:

1848-1972 (This range reflects the Cheshire Railroad's period of construction and use until its abandonment in 1972.)

46. Statement of Integrity:

Despite compromised integrity at the downstream end following a 2005 flood event, the stone arch culvert at mm 100.06 retains overall integrity of location, setting, materials, design, workmanship, feeling, and association. The flood damage is limited to the outlet and the downstream end of the barrel.

47. Boundary Discussion:

The boundaries of this property are defined by the extent of stonework embodied in the culvert structure and the adjacent stream bank armoring.

48. Bibliography and/or References:

Cheshire Railroad. *By-Laws and Act of Incorporation of the Cheshire Railroad Company and General Railroad Laws*. Keene, N. H.: Printed by H. A. Bill, 1845.

-----, *Annual Reports of the Directors of the Cheshire Railroad Company, to the Corporation* Keene, N. H., various dates from 1846.

Garvin, James L. Keene Stone Arch Bridge Inventory Form. New Hampshire Division of Historical Resources, 2006.

Griffin, S[imon] G[oodell]. *A History of the Town of Keene from 1732, When the Township was Granted by Massachusetts, to 1874, When It Became a City*. Keene, N. H.: Sentinel Printing Company, 1904; facsimile edition, Bowie, Maryland: Heritage Books, Inc., 1980.

Hostutler, Elizabeth J. Cheshire Railroad Area Form. New Hampshire Department of Transportation, 1994.

Hurd, D. Hamilton. *History of Cheshire and Sullivan Counties, New Hampshire*. Philadelphia: J. W. Lewis & Company, 1886.

Keene History Committee. "Upper Ashuelot," *A History of Keene, New Hampshire*. Keene, N. H.: by the committee, 1968.

Lindsell, Robert S. *The Rail Lines of Northern New England*. Pepperell, Mass.: Branch Line Press, 2000.

Proper, David. "For decades, bridges stood over troubled water." *The Keene Sentinel*, March 28, 2006.

-----, "Lincoln never did stay here, but Keene man rented his home" [Lucian Tilton]. *The Keene Sentinel*, February 11, 2003.

Wallace, R. Stuart, Ph.D., and Lisa B. Mausolf. "New Hampshire Railroads: Historic Context Statement." Concord, N. H.: New Hampshire Department of Transportation, 2001. On file at the NH Division of Historical Resources, Concord, N. H.

INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #WES0006

Wilber, Clifford C. *Centenary of the Opening of the Cheshire Railroad to Keene, N. H., May 16, 1848*.
Keene, N. H.: Keene National Bank [1948].

-----, "Stone Arch Railroad Bridge," "The Good Old Days" No. 472, *The Keene Sentinel*, November 23,
1936.

-----, "Iron Railing on Stone Arch Bridge," "The Good Old Days" No. 486, *The Keene Sentinel*, December
10, 1936.

Surveyor's Evaluation:

NR listed: individual _____
within district _____

Integrity: yes _____X_____
no _____

NR eligible: individual _____X_____
within district _____X_____
not eligible _____
more info needed _____

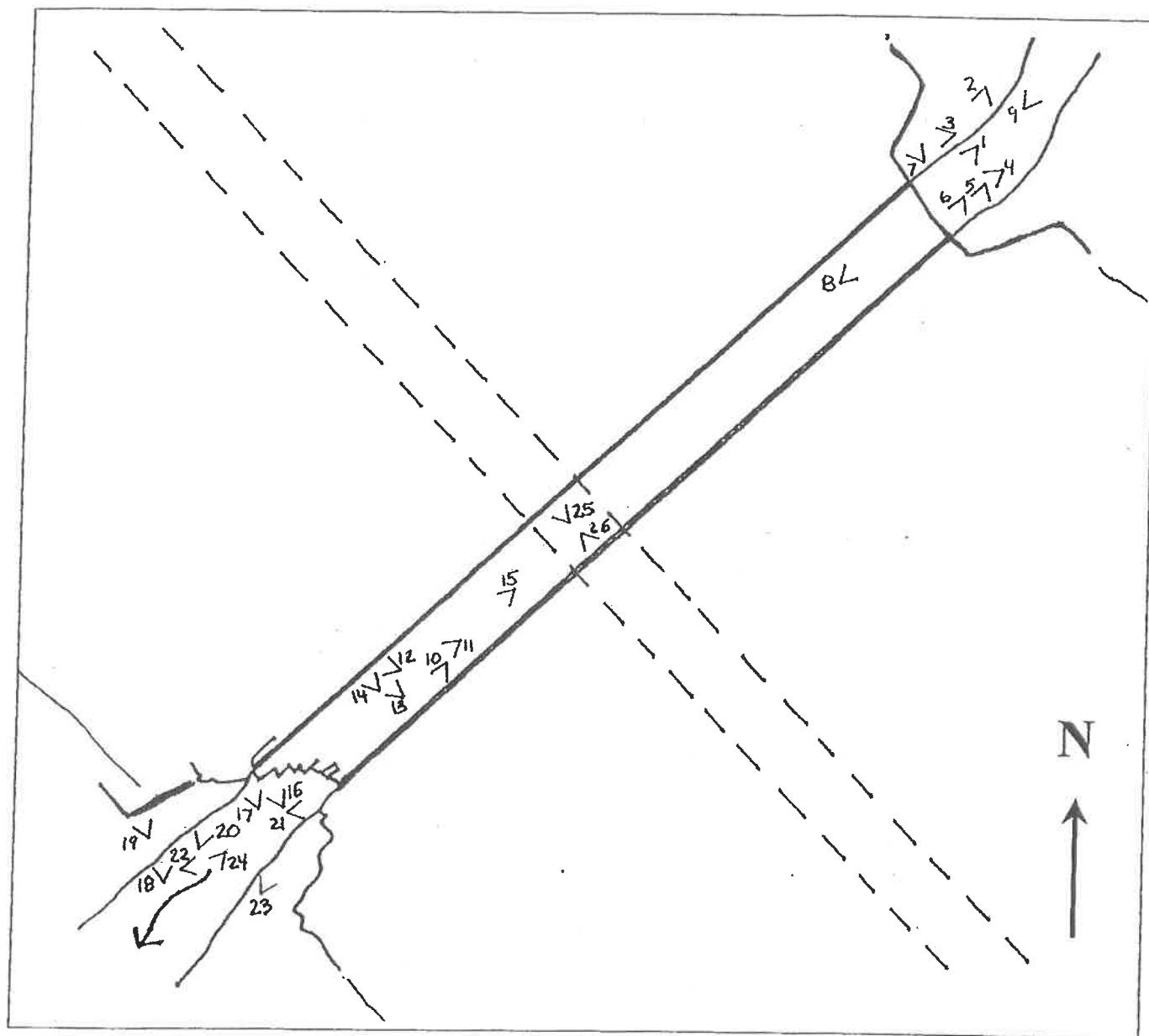
NR Criteria: A _____X_____
B _____
C _____X_____
D _____
E _____

NHDHR INVENTORY #WES0006



INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #WES0006



Site Map with Photo Views

INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #WES0006

Address: mm 100.06 on the Cheshire Railroad in East Westmoreland, NH

Date taken: 30 July 08 Negative stored at: NHDOT

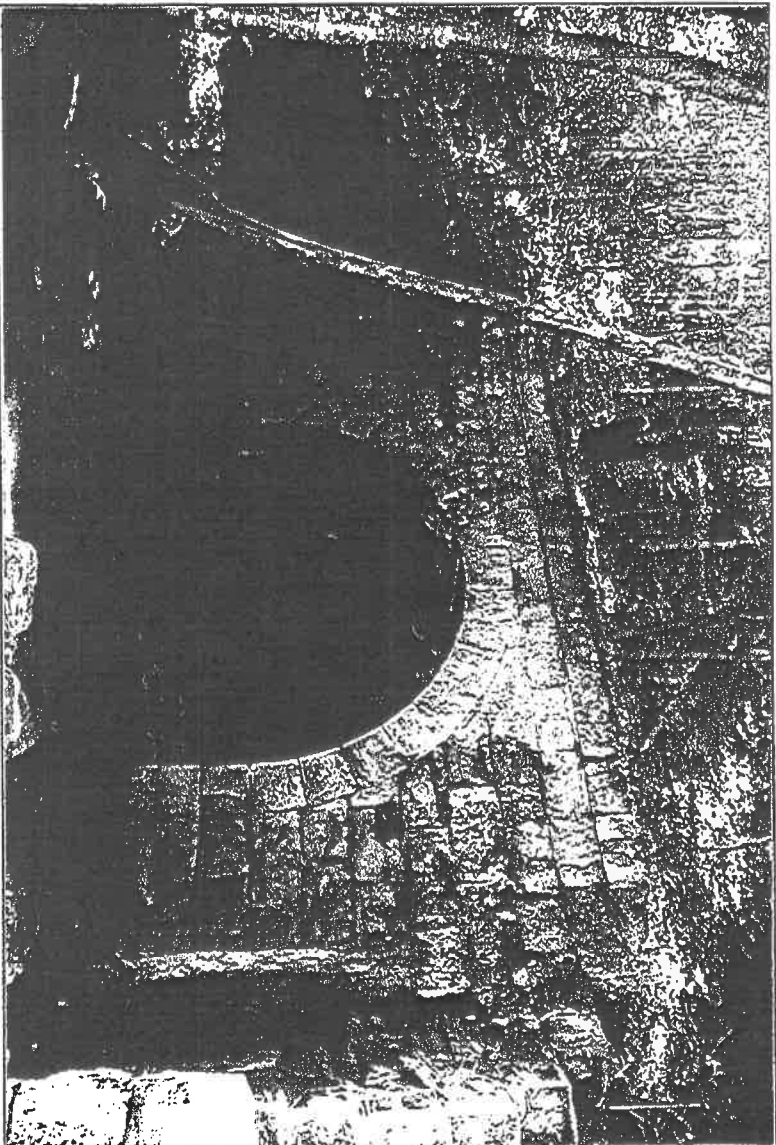


Photo #2 description: View of culvert at inlet
Roll #: 1 Frame #: 36 Direction: SW

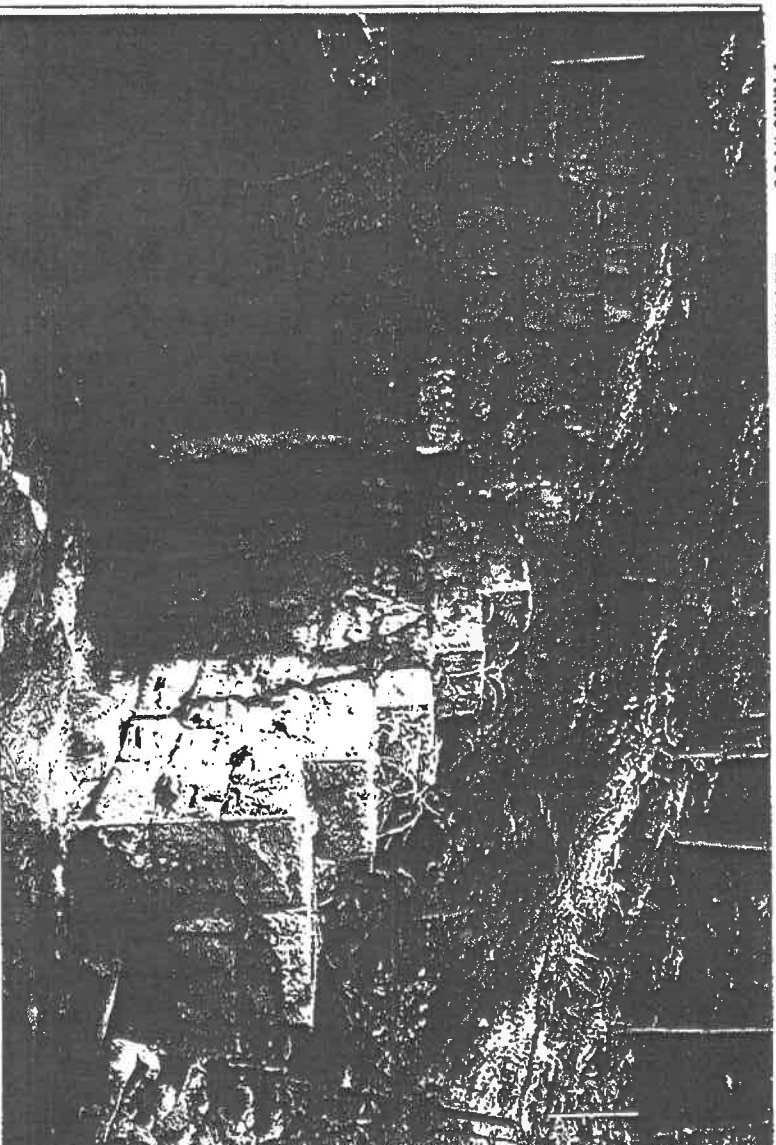


Photo #3 description: Showing northerly wingwall at inlet
Roll #: 1 Frame #: 34 Direction: SW

INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #WES0006

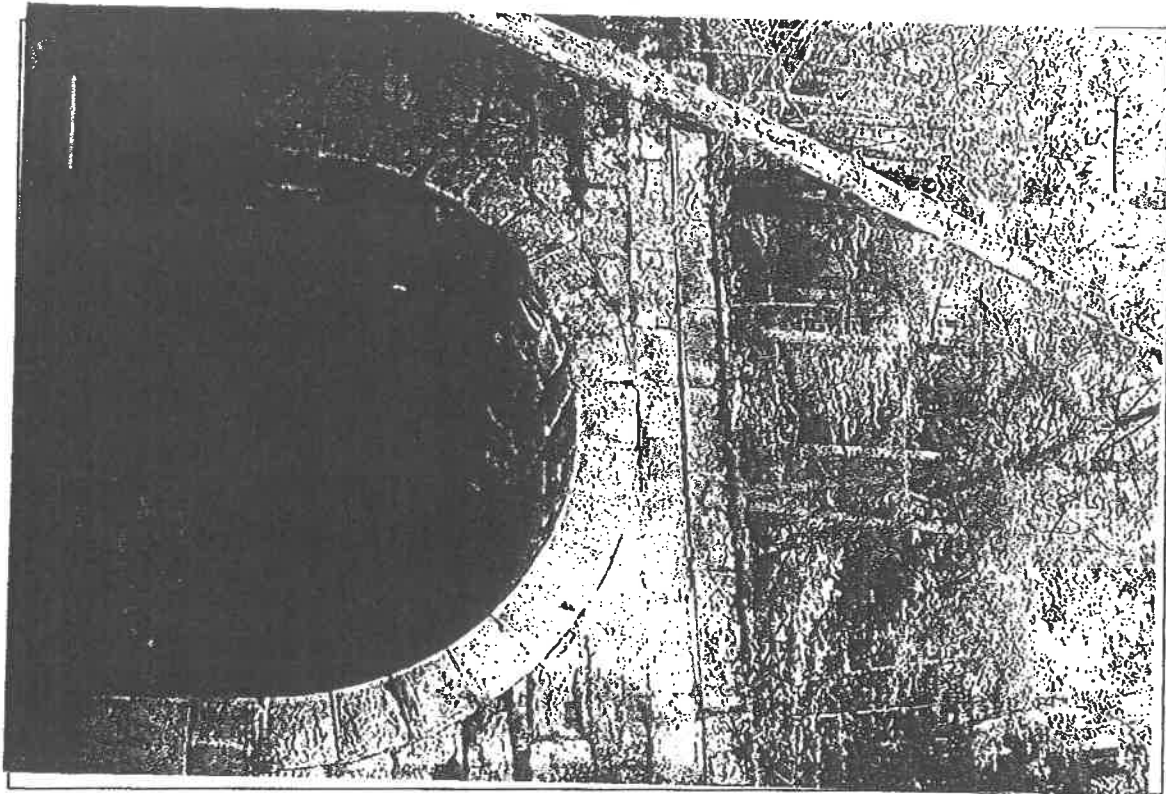


Photo #4 description: View of culvert at inlet, showing rail bed far above

Roll #: 1 Frame #: 32 Direction: SW

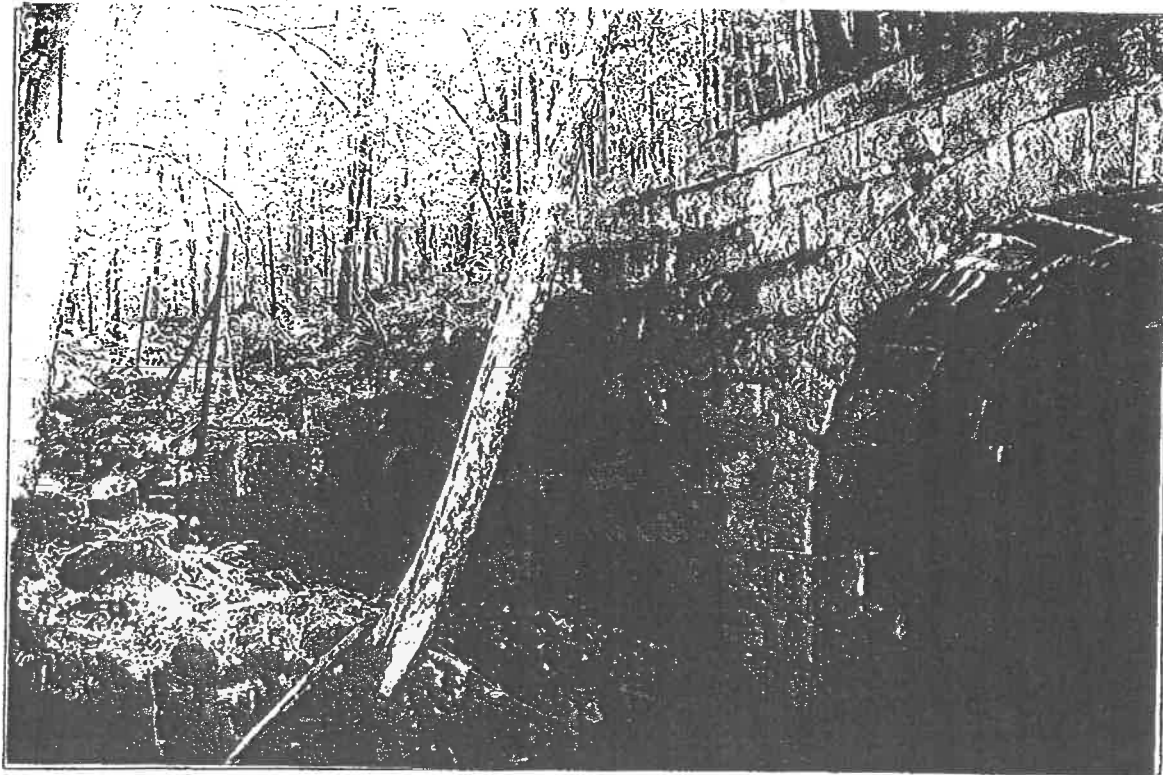


Photo #5 description: View of wingwall at inlet

Roll #: 1 Frame #: 31 Direction: SW

INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #WES0006

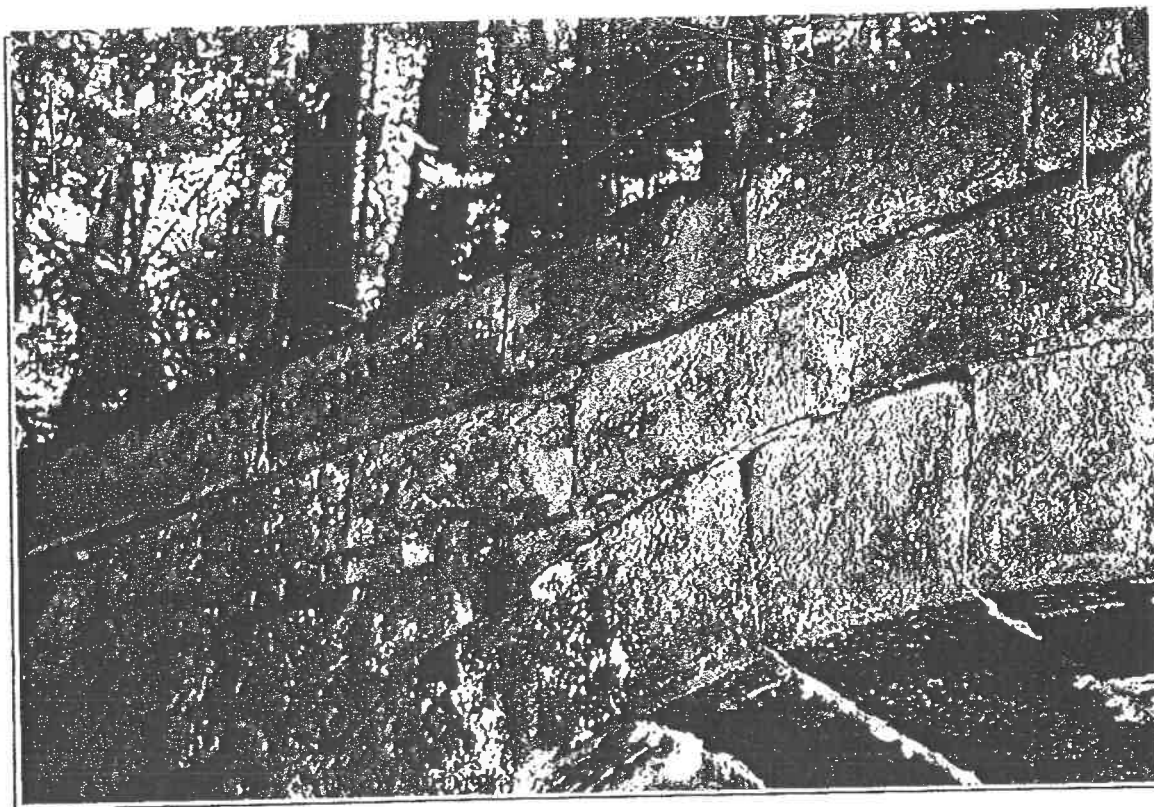


Photo #6 description: View of projecting crown at inlet
Roll #: 1 Frame #: 29 Direction: NE

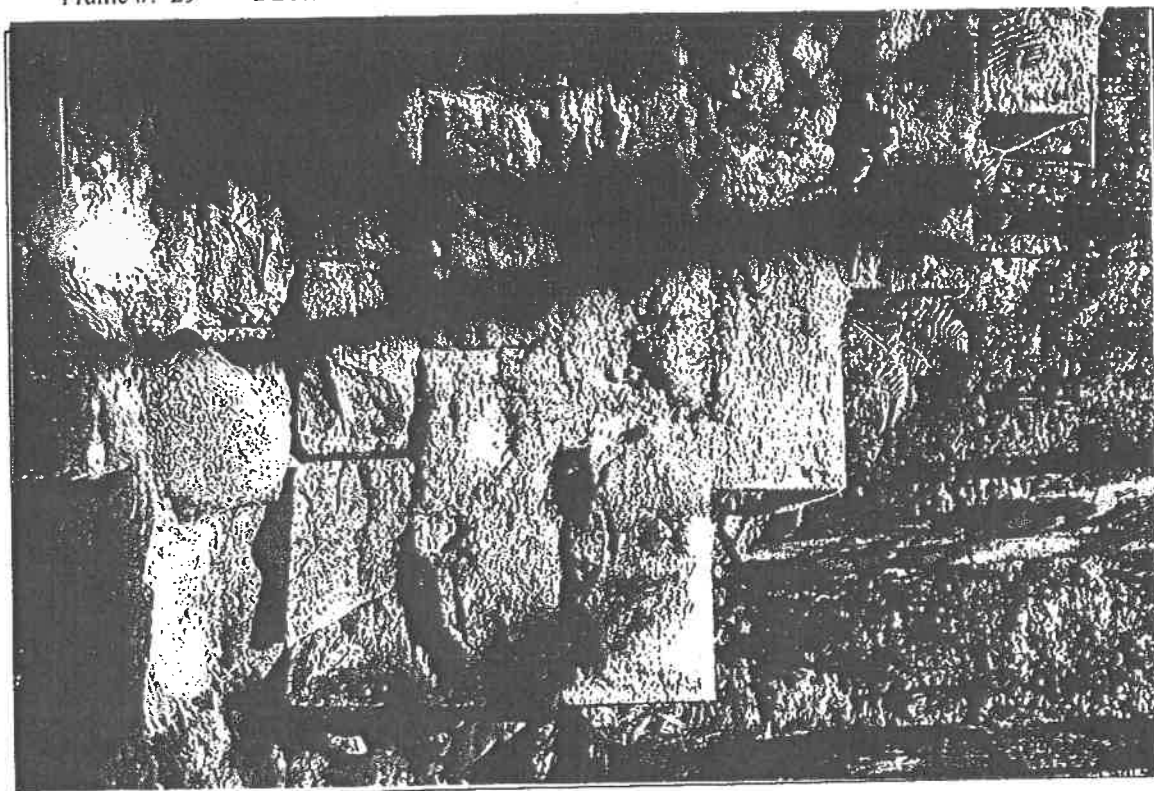


Photo #7 description: Detail of northerly wingwall at inlet
Roll #: 1 Frame #: 28 Direction: NW

INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #WES0006

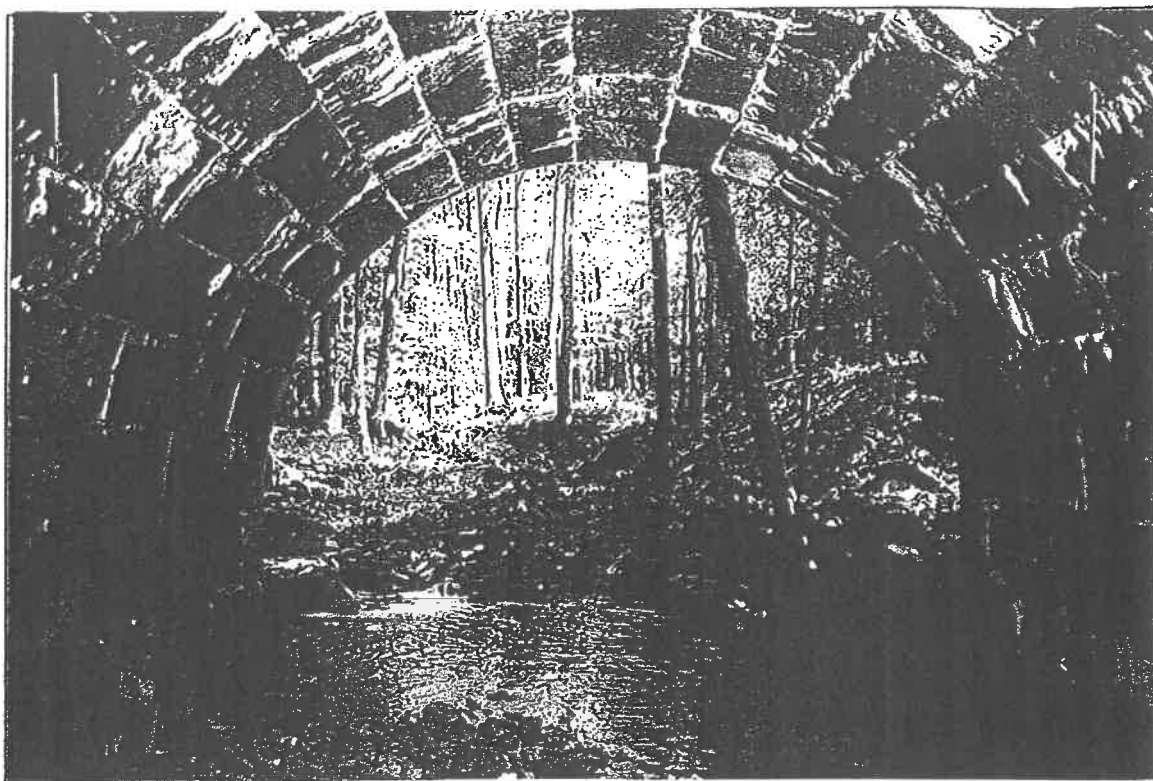


Photo #8 description: View of inlet from culvert
Roll #: 1 Frame #: 27 Direction: NE

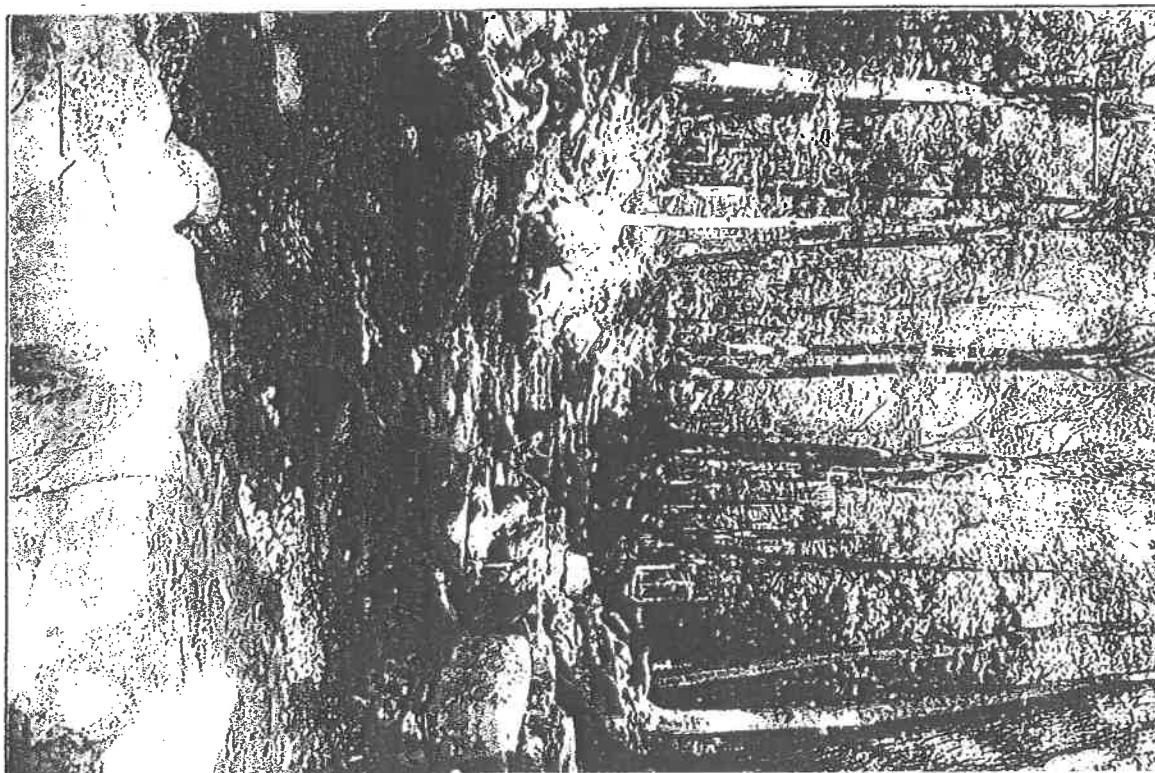


Photo #9 description: View of inlet end
Roll #: 1 Frame #: 30 Direction: NE

INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #WES0006

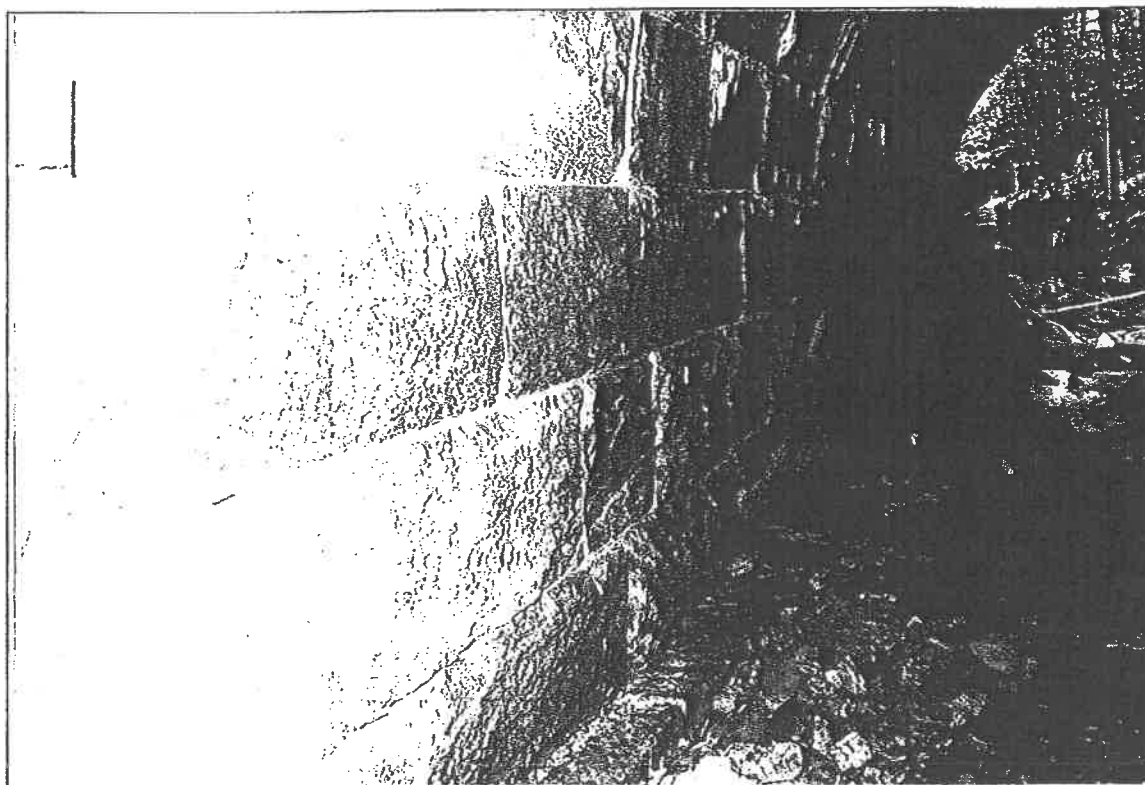


Photo #10 description: Detail of wall construction
Roll #: 1 Frame #: 23 Direction: SW



Photo #11 description: View of damage to culvert and fallen stone section
Roll #: 1 Frame #: 22 Direction: SW

INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #WES0006

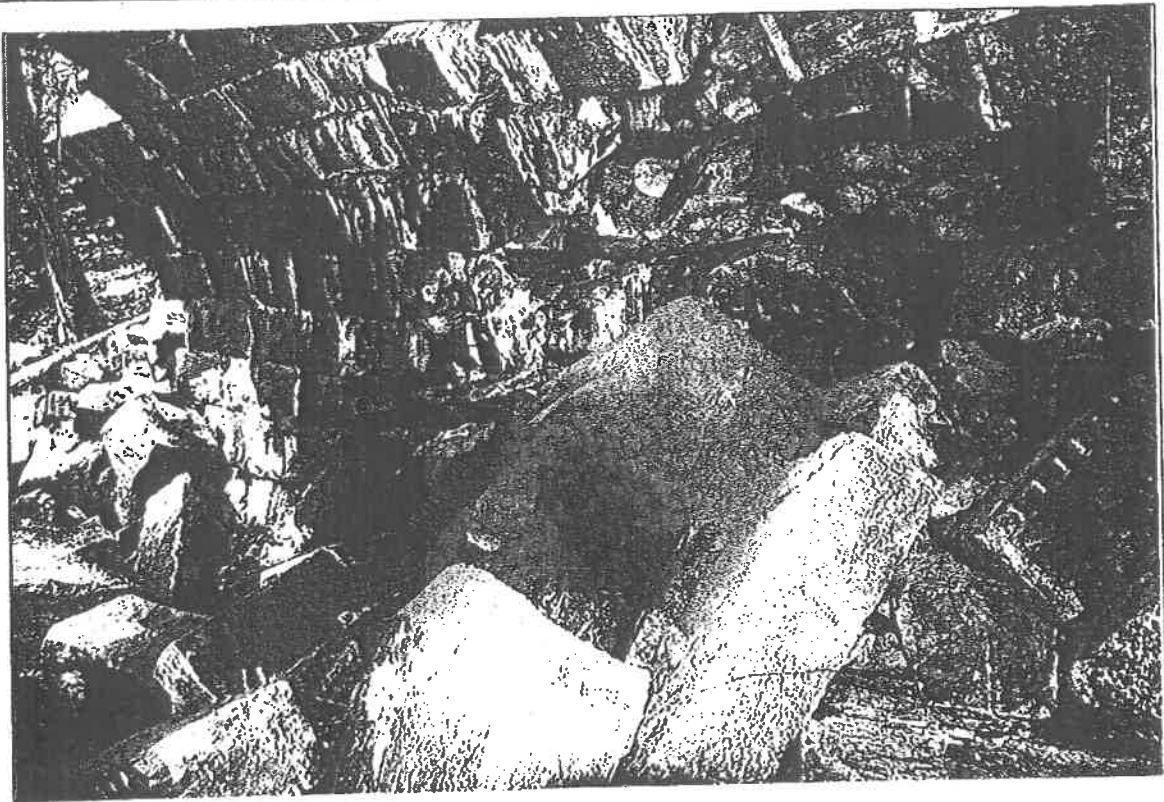


Photo #12 description: Fallen stones with plug and feather quarry marks
Roll #: 1 Frame #: 21 Direction: W

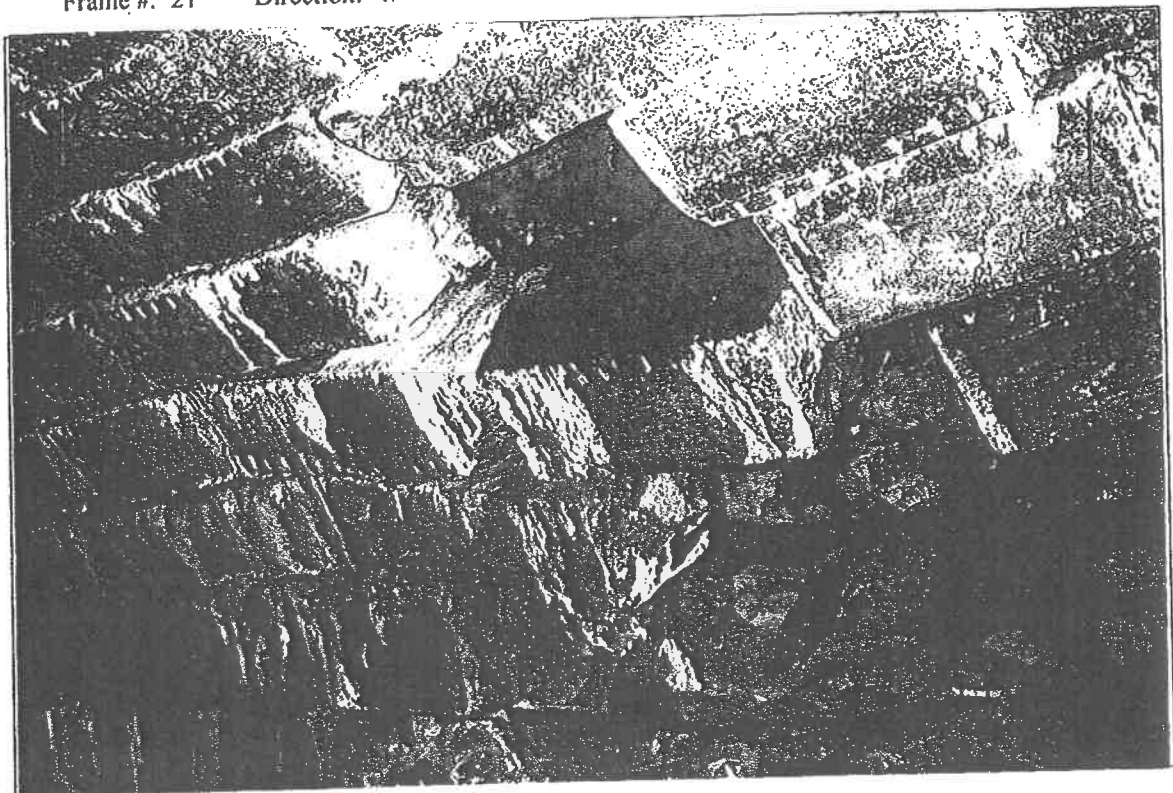


Photo #13 description: Bulging north wall and fallen stones
Roll #: 1 Frame #: 20 Direction: W

INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #WES0006

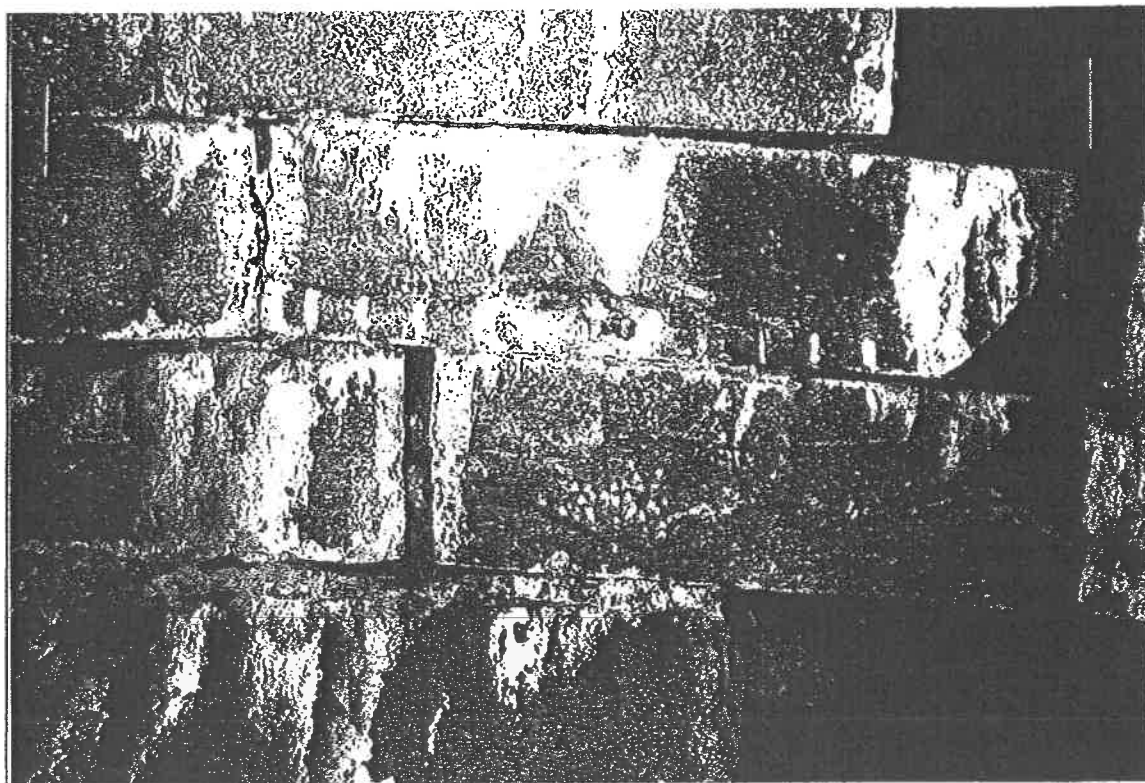


Photo #14 description: View of dislocated stones and gaps from fallen blocks. Note plug and feather quarry marks.

Roll #: 1 Frame #: 19 Direction: NW

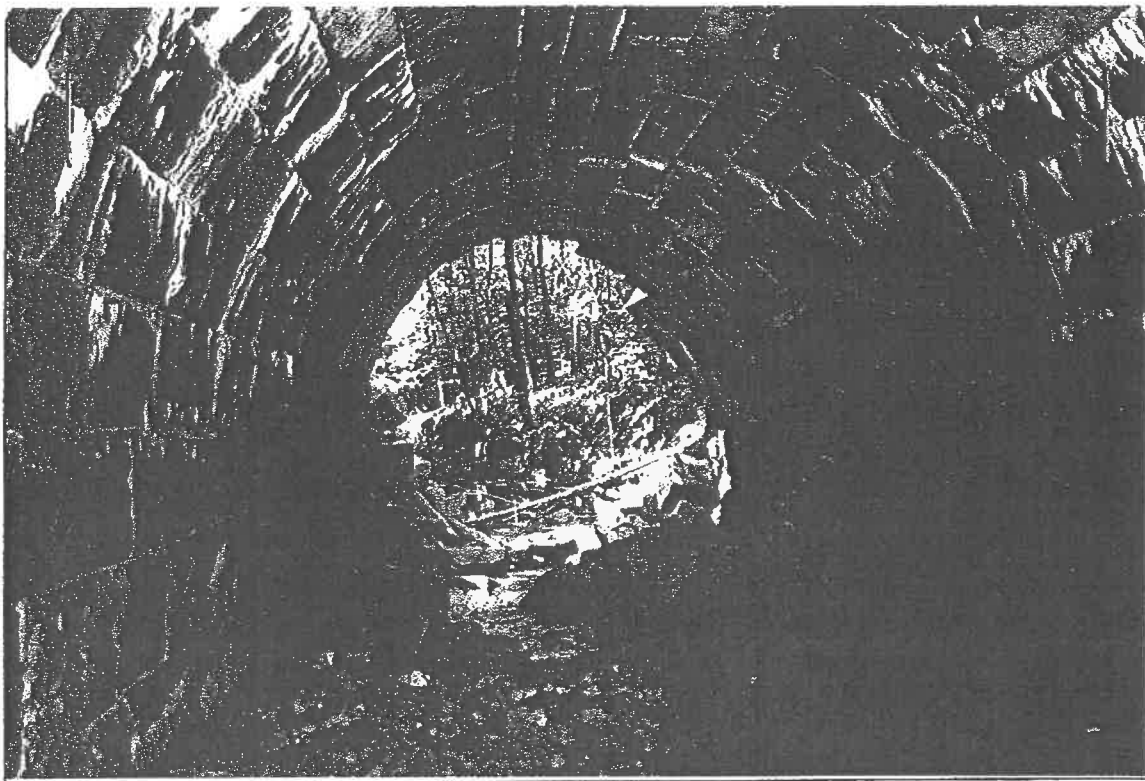


Photo #15 description: View at downstream to end of culvert. Left to right, view of shelf and cave-in debris

Roll #: 1 Frame #: 24 Direction: SW

INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #WES0006



Photo #16 description: Showing plug and feather quarry marks and hoist marks
Roll #: 1 Frame #: 18 Direction: SW

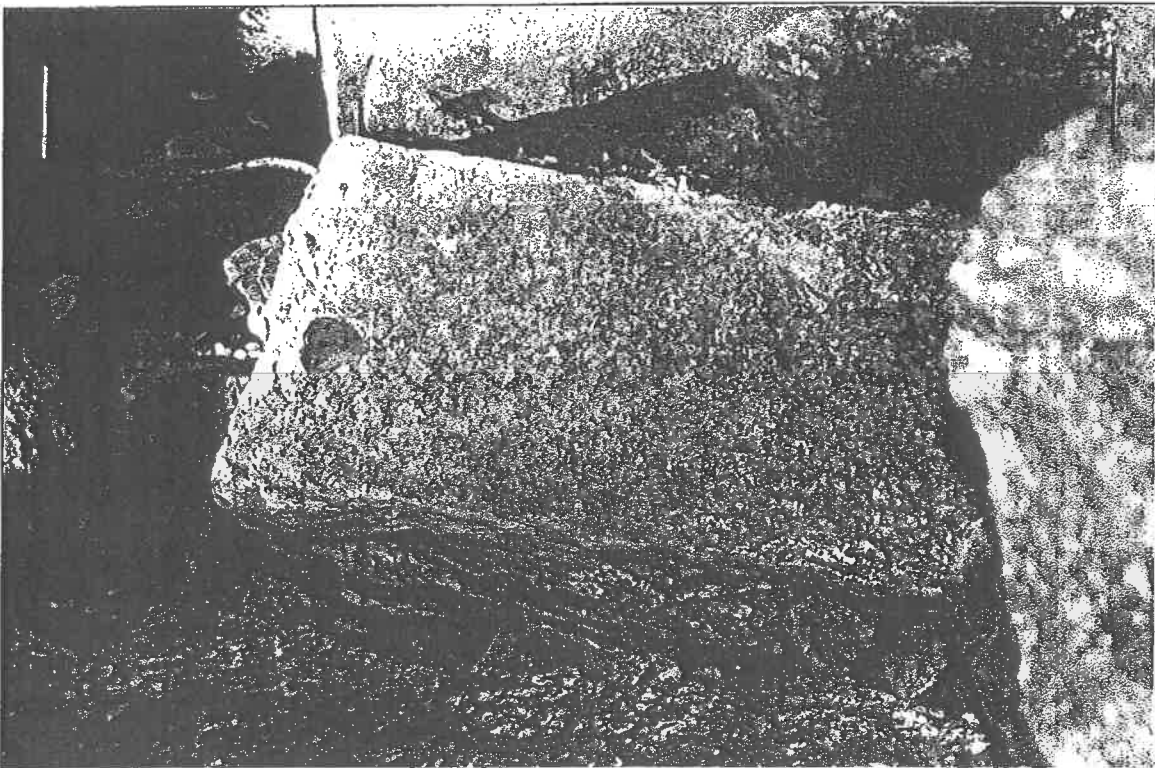


Photo #17 description: Large hoist mark in fallen block
Roll #: 1 Frame #: 17 Direction: NW

INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #W/ES0006

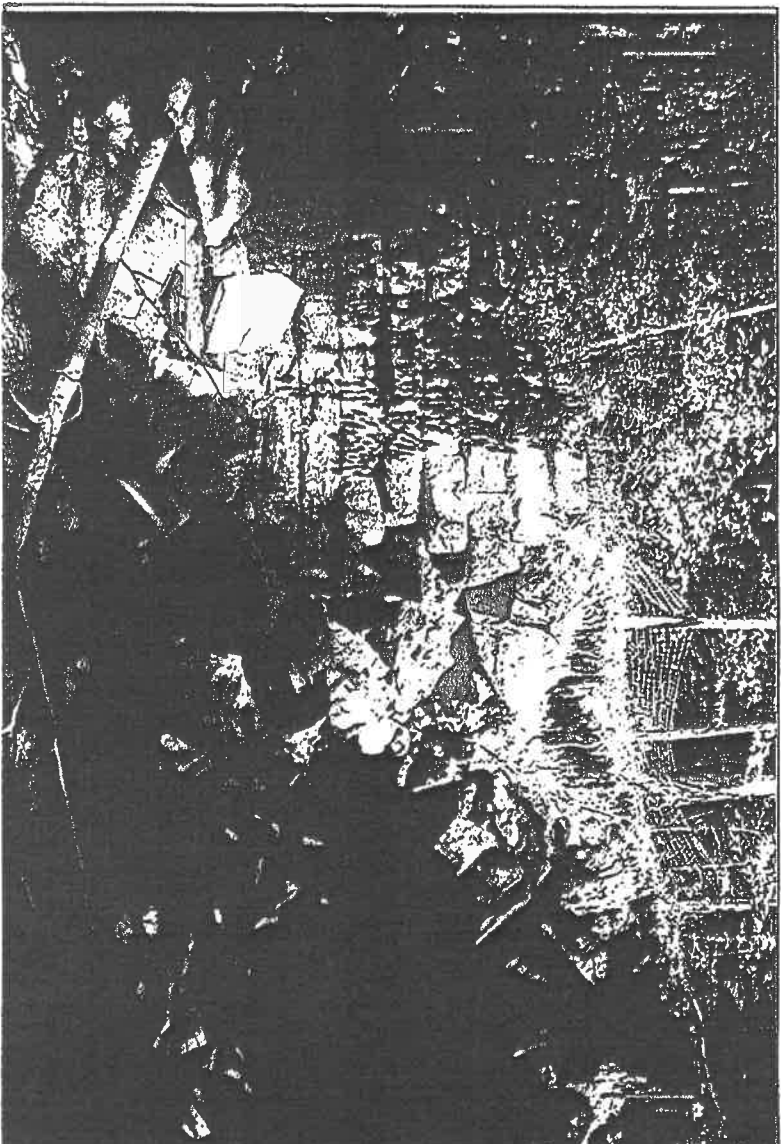


Photo #18 description: Northerly wingwall at outlet
Roll #: 1 Frame #: 14 Direction: N

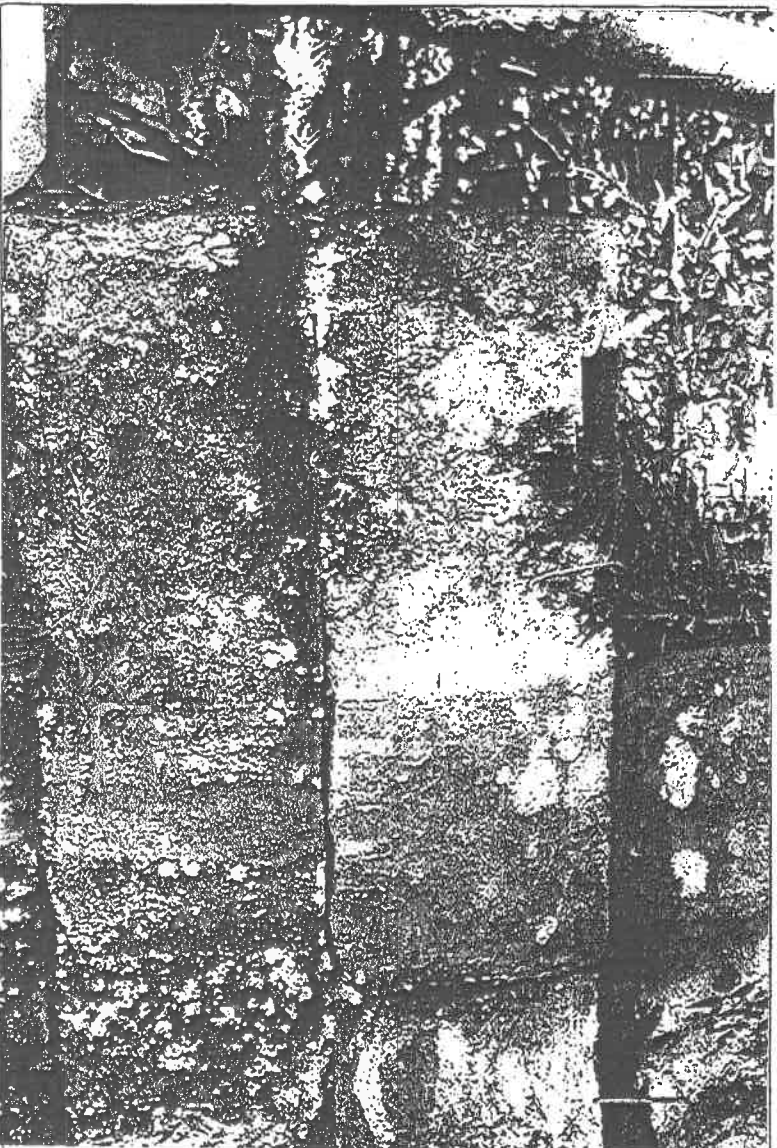


Photo #19 description: View of downstream wingwall
Roll #: 1 Frame #: 11 Direction: NW

INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #WES0006

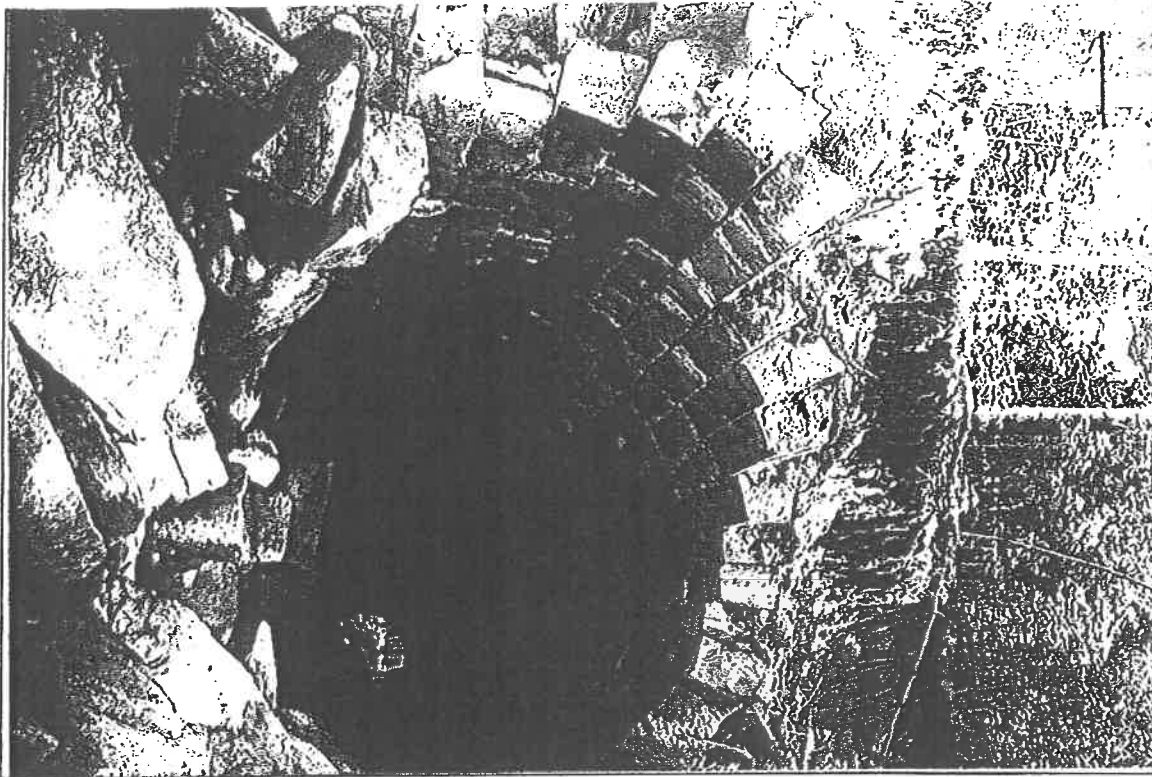


Photo #20 description: View showing deteriorating outlet
Roll #: 1 Frame #: 16 Direction: NE

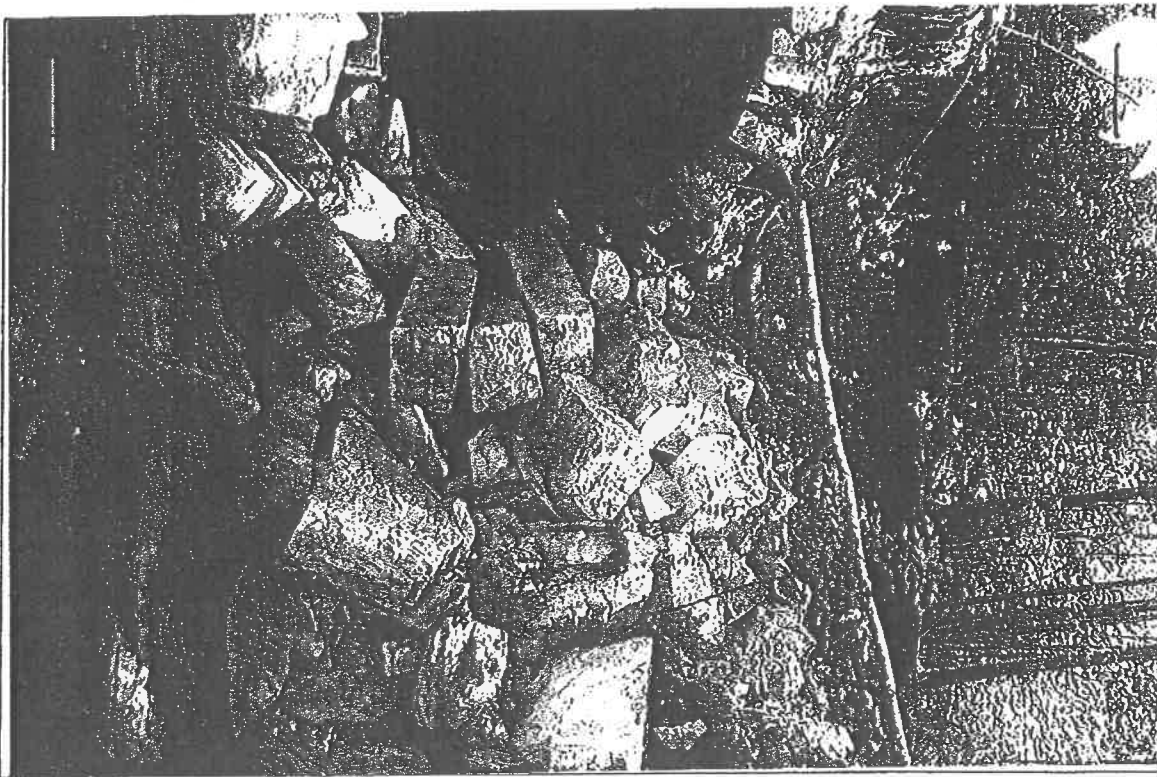


Photo #21 description: View of deterioration
Roll #: 1 Frame #: 15 Direction: NE

INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #WES0006

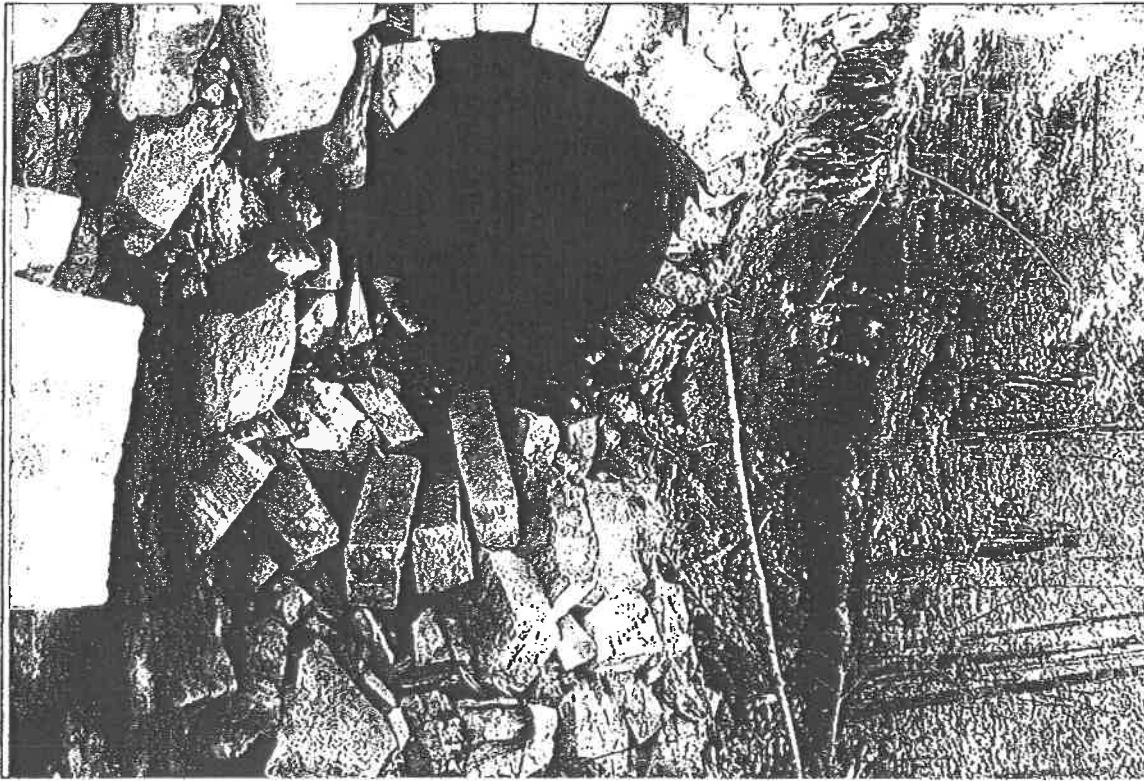


Photo #22 description: View of collapsed wall and debris

Roll #: 1 Frame #: 10 Direction: NE

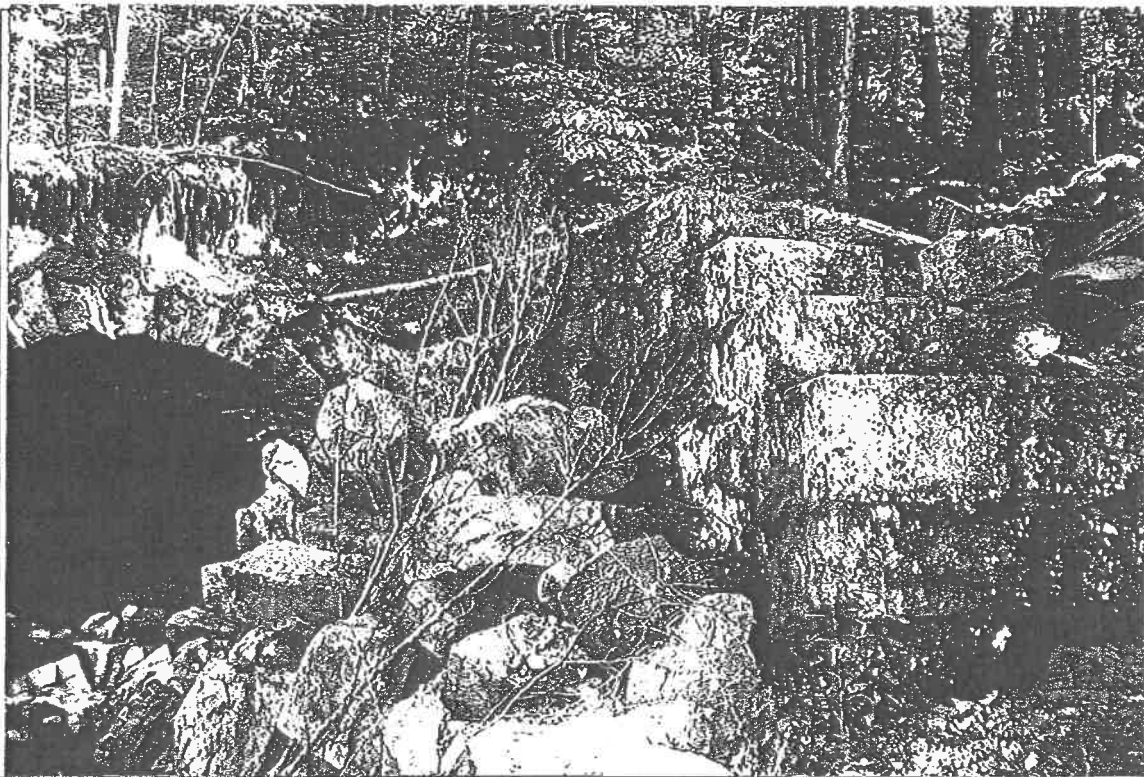


Photo #23 description: Remaining portion of wingwall amid debris

Roll #: 1 Frame #: 13 Direction: NE

INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #WES0006



Photo #24 description: View from culvert outlet

Roll #: 1 Frame #: 12 Direction: SW



Photo #25 description: Trail view from above culvert

Roll #: 1 Frame #: 6 Direction: NW

INDIVIDUAL INVENTORY FORM

NHDHR INVENTORY #WES0006



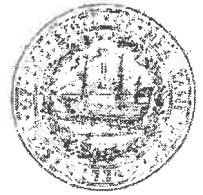
Photo #26 description: Trail view from above culvert

Roll #: 1 Frame #: 7 Direction: SE



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner



WETLANDS AND NON-SITE SPECIFIC PERMIT 2008-01389

Permittee: NH Dept of Transportation, , Po Box 483, Concord, NH 03301
Project Location: Gilboa Road, Westmoreland
Westmoreland Tax Map/Lot No.
Waterbody: Unnamed Wetland

Page 1 of 2

NOTE--
CONDITIONS

APPROVAL DATE: 08/04/2008

EXPIRATION DATE: 08/04/2013

Based upon review of the above referenced application, in accordance with RSA 482-A and RSA 485-A:17, a Wetlands Permit and Non-Site Specific Permit was issued. This permit shall not be considered valid unless signed as specified below.

CORRECTED PERMIT Corrected (add condition 14)

PERMIT DESCRIPTION: Install a concrete invert in a 15 ft. x 165 ft. partially collapsed stone arch culvert impacting 2,975 sq. ft. of stream and banks (500 sq. ft. temporary). NHDOT project #66021A.

THIS APPROVAL IS SUBJECT TO THE FOLLOWING PROJECT SPECIFIC CONDITIONS:

1. All work shall be in accordance with plans by NHDOT Bureau of Rail and Transit dated 7-11-08 as received by the Department on October July 21, 2008.
 2. Dredged material shall be placed for stabilization or out of the DES Wetlands Bureau jurisdiction.
 3. Appropriate siltation/erosion/turbidity controls shall be in place prior to construction, shall be maintained during construction, and shall remain until the area is stabilized.
 4. Construction equipment shall minimize the impacts within surface waters as noted in the construction sequence.
 5. The tracks or tires of the equipment crossing the stream shall be devoid of soil material prior to the two crossings.
 6. Within three days of final grading in an area that is in or adjacent to wetlands or surface waters, all exposed soil areas shall be stabilized by seeding and mulching during the growing season, or if not within the growing season, by mulching with tack or netting and pinning on slopes steeper than 3:1.
 7. The contractor responsible for completion of the work shall utilize techniques described in the DES Best Management Practices for Urban Stormwater Runoff Manual (January, 1996) and the Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire (August, 1992).
 8. Extreme precautions to be taken within riparian areas to limit unnecessary removal of vegetation during road construction and areas cleared of vegetation to be revegetated as quickly as possible.
 9. There shall be no further alteration to wetlands or surface waters without amendment of this permit.
 10. Bank repair shall be constructed within seven days of the culvert repair.
 11. Work shall be done during low flow.
 12. The file shall be notified in writing at least 24 hours prior to the project start date.
 13. Photos of the project shall be submitted to the file within 30 days of stabilization.
- ADDED**
14. The applicant shall continue to work with the NH Fish and Game on the baffle and substrate design.

DES Web site: www.des.nh.gov

P.O. Box 95, 29 Hazen Drive, Concord, New Hampshire 03302-0095

Telephone: (603) 271-2147 • Fax: (603) 271-6588 • TDD Access: Relay NH 1-800-735-2964

GENERAL CONDITIONS THAT APPLY TO ALL DES WETLANDS PERMITS:

1. A copy of this permit shall be posted on site during construction in a prominent location visible to inspecting personnel;
2. This permit does not convey a property right, nor authorize any injury to property of others, nor invasion of rights of others;
3. The Wetlands Bureau shall be notified upon completion of work;
4. This permit does not relieve the applicant from the obligation to obtain other local, state or federal permits that may be required (see attached form for status of federal wetlands permit);
5. Transfer of this permit to a new owner shall require notification to and approval by the Department;
6. This permit shall not be extended beyond the current expiration date.
7. This project has been screened for potential impacts to **known** occurrences of rare species and exemplary natural communities in the immediate area. Since many areas have never been surveyed, or have received only cursory inventories, unidentified sensitive species or communities may be present. This permit does not absolve the permittee from due diligence in regard to state, local or federal laws regarding such communities or species.
8. The permittee shall coordinate with the NH Division of Historic Resources to assess and mitigate the project's effect on historic resources.

APPROVED: _____

Gino Infascelli

DES Wetlands Bureau

BY SIGNING BELOW I HEREBY CERTIFY THAT I HAVE FULLY READ THIS PERMIT
AND AGREE TO ABIDE BY ALL PERMIT CONDITIONS.

OWNER'S SIGNATURE (required)

Bureau of Rail & Transit

CONTRACTOR'S SIGNATURE (required)



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner



NOTICE TO RECIPIENTS OF MINOR IMPACT N.H. WETLANDS PERMITS

Your permit was approved by the New Hampshire Wetlands Bureau as a minor impact project, and your project will be reviewed by the U.S. Army Corps. of Engineers for possible approval under the Army Corps New Hampshire State Programmatic General Permit - SPGP. The Army Corps will notify you within thirty (30) days if they will require additional information or an individual federal permit application.

If you do not hear from the Army Corps within thirty (30) days, and your project meets the conditions of the SPGP (attached), your project will automatically be approved under the SPGP. You should contact the Army Corps, at 1-800-343-4789, if your project does not meet the conditions of the SPGP.

NO WORK SHOULD BE DONE WITHOUT AUTHORIZATION FROM THE ARMY CORPS UNLESS THIRTY (30) DAYS HAVE PASSED AFTER N.H. WETLANDS BUREAU APPROVAL, AND ALL CONDITIONS OF THE SPGP ARE MET.

THESE APPROVALS DO NOT RELIEVE YOU FROM OBTAINING ANY NECESSARY LOCAL PERMITS THAT MAY BE REQUIRED BY YOUR TOWN.

IF YOU HAVE ANY QUESTIONS, PLEASE FEEL FREE TO GIVE US A CALL AT 603-271-2147

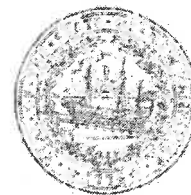
THIS NOTICE WAS SENT WITH MINOR IMPACT PERMIT # _____ ON _____ BY _____

CC: U.S. ARMY CORPS. OF ENGINEERS



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner



WETLANDS AND NON-SITE SPECIFIC PERMIT 2008-01389

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Westmoreland Tax Map/Lot No.
Waterbody: Unnamed Wetland

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CONDITIONS

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5. The tracks or tires of the equipment crossing the stream shall be devoid of soil material prior to the two crossings.
6. Within three days of final grading in an area that is in or adjacent to wetlands or surface waters, all exposed soil areas shall be stabilized by seeding and mulching during the growing season, or if not within the growing season, by mulching with tack or netting and pinning on slopes steeper than 3:1.
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3. The Wetlands Bureau shall be notified upon completion of work;
4. This permit does not relieve the applicant from the obligation to obtain other local, state or federal permits that may be required (see attached form for status of federal wetlands permit);
5. Transfer of this permit to a new owner shall require notification to and approval by the Department;
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7. This project has been screened for potential impacts to **known** occurrences of rare species and exemplary natural communities in the immediate area. Since many areas have never been surveyed, or have received only cursory inventories, unidentified sensitive species or communities may be present. This permit does not absolve the permittee from due diligence in regard to state, local or federal laws regarding such communities or species.
8. The permittee shall coordinate with the NH Division of Historic Resources to assess and mitigate the project's effect on historic resources.

APPROVED: _____

Gino Infascelli

DES Wetlands Bureau

**BY SIGNING BELOW I HEREBY CERTIFY THAT I HAVE FULLY READ THIS PERMIT
AND AGREE TO ABIDE BY ALL PERMIT CONDITIONS.**

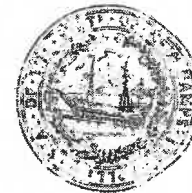
OWNER'S SIGNATURE (required)

CONTRACTOR'S SIGNATURE (required)



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner



NOTICE TO RECIPIENTS OF MINOR IMPACT N.H. WETLANDS PERMITS

Your permit was approved by the New Hampshire Wetlands Bureau as a minor impact project, and your project will be reviewed by the U.S. Army Corps. of Engineers for possible approval under the Army Corps New Hampshire State Programmatic General Permit - SPGP. The Army Corps will notify you within thirty (30) days if they will require additional information or an individual federal permit application.

If you do not hear from the Army Corps within thirty (30) days, and your project meets the conditions of the SPGP (attached), your project will automatically be approved under the SPGP. You should contact the Army Corps, at 1-800-343-4789, if your project does not meet the conditions of the SPGP.

NO WORK SHOULD BE DONE WITHOUT AUTHORIZATION FROM THE ARMY CORPS UNLESS THIRTY (30) DAYS HAVE PASSED AFTER N.H. WETLANDS BUREAU APPROVAL. AND ALL CONDITIONS OF THE SPGP ARE MET.

THESE APPROVALS DO NOT RELIEVE YOU FROM OBTAINING ANY NECESSARY LOCAL PERMITS THAT MAY BE REQUIRED BY YOUR TOWN.

IF YOU HAVE ANY QUESTIONS, PLEASE FEEL FREE TO GIVE US A CALL AT 603-271-2147

THIS NOTICE WAS SENT WITH MINOR IMPACT PERMIT # _____ ON _____ BY _____

CC: U.S. ARMY CORPS. OF ENGINEERS

**STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION**

DATE: July 17, 2008

FROM: *CHH* Charles H. Hood
Administrator

AT (OFFICE): Department of
Transportation

SUBJECT Dredge & Fill Application
Westmoreland, 66021A-2
Bureau of
Environment

TO Gino Infascelli, Public Works Permitting Officer
New Hampshire Wetlands Bureau
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Forwarded herewith is the application package prepared by NH DOT Bureau of Rail & Transit for the subject minor impact project. This project is classified as minor due to the total square feet of impacts to an unnamed perennial stream. A stone arch culvert is located under the Cheshire Rail Line in Westmoreland, approximately 900 feet east of Gilboa Road. During the 2005 flood event, the outlet end of this culvert collapsed. The side slopes were stabilized after that event; however, the condition of the culvert has continued to deteriorate. The gravel floor of the arch is now eroding, causing several toe blocks to become dislodged. The proposed project involves the placement of a concrete floor in the bottom of the arch to prevent further erosion and undermining of the toe blocks. The concrete will be level with the streambed upstream and downstream from the arch.

Due to the erosion that is now occurring behind the toe blocks of the arch, this culvert may not withstand another high flow event. For this reason, the Bureau of Rail & Transit would like to complete this work this summer during low flow, and an expedited review of this application is respectfully requested.

The lead people to contact for this project are Brain Lombard, Railway Operations Engineer, Bureau of Rail & Transit (271-2468 or blombard@dot.state.nh.us), or Christine Perron, Senior Environmental Manager, Bureau of Environment (271-3717 or cperron@dot.state.nh.us).

Enclosed is a copy of a payment voucher for this application.

If and when this application meets with the approval of the Bureau, please send the permit directly to Charles Hood, Administrator, Bureau of Environment.

CHH: cjp
Enclosures

cc:
Kim Tuttle, NH Fish & Game
Edna Feighner, NH Division of Historic Resources
Bill Neidemyer, US Fish & Wildlife
Mark Kern, US Environmental Protection Agency
Rich Roach, US Army Corp of Engineers

minor
2,975 SF
\$595.00

Recorded
2/1/09
2/1/09



THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION



GEORGE N. CAMPBELL, JR.
COMMISSIONER

JEFF BRILLHART, P.E.
ASSISTANT COMMISSIONER

July 17, 2008

VIA CERTIFIED MAIL

Cindi Adler
Town Clerk
PO Box 111
Westmoreland, NH 03467

Dear Ms. Adler:

Re: Dredge and Fill Application
Westmoreland, 66021A

As required by Chapter 482-A: 3, New Hampshire Revised Statutes Annotated, enclosed are four copies of the referenced Dredge and Fill Application, project location map, and detailed plans, which have been submitted today to the NH Wetlands Bureau. The application copies are provided for your use in complying with the requirement that Town and City Clerks distribute one copy, each, as appropriate to the Conservation Commission, Planning Board, and Board of Selectmen (and Mayor or City Manager). The fourth set should be retained by your office and made reasonably accessible to the public. Inasmuch as applications for public projects by agencies of the state are filed directly with the Bureau, and additional, separate notification of abutters is not required, no further action is required on your part with respect to mailing or retention of postal receipts relative to this application.

SENDER: COMPLETE THIS SECTION

- ☒ Complete Items 1, 2, and 3. Also complete Item 4 if Restricted Delivery is desired.
- ☒ Print your name and address on the reverse so that we can return the card to you.
- ☒ Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

CINDI ADLER
TOWN CLERK
PO BOX 111
WESTMORELAND NH 03467

CHH: cjp
Enclosures
c.c. NH Wetlands Bureau

s:\projects\rail & transit\2008\66021A

COMPLETE THIS SECTION ON DELIVERY

A. Signature
☒ Agent
☒ Addressee

B. Received by (Printed Name)
Town Clerk

C. Date of Delivery
7/18/08

D. Is delivery address different from Item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type

- ☒ Certified Mail
- ☐ Express Mail
- ☐ Registered
- ☐ Return Receipt for Merchandise
- ☐ Insured Mail
- ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number
(Transfer from service label)

7002 2030 0001 0226 4968

PS Form 3811, February 2004

Domestic Return Receipt Westmoreland 66021A 102585-02-M-15-00

**NH WETLANDS BUREAU PERMIT APPLICATION
INTRA-DEPARTMENT PROJECT INFORMATIONAL FORM**

APPLICANT'S NAME: Brian Lombard, PE

BUREAU/AGENCY: Rail and Transit

CONTACT PERSON: Brian Lombard, PE

TELEPHONE #: 271-3465

EMAIL ADDRESS: Blombard@DOT.state.NH.US

PROJECT NAME: Westmoreland – Stone Arch Culvert on Mill Brook

STATE #: 66021A

WORK CLASS CODE: 240

ACCOUNT CODE: 010 096 2991 090

BRIDGE #: N/A

COUNTY: Cheshire

PROPOSED ADVERTISING DATE: N/A

PROPOSED CONSTRUCTION DATE: August 2008

IS THIS A MAJOR OR MINOR WETLAND IMPACT PROJECT (YES/NO)? Minor Impact Project

IF YES, HAS A QUESTIONNAIRE LETTER BEEN SENT TO THE NH NATURAL HERITAGE INVENTORY?

MITIGATION: None Required

PROJECT DESCRIPTION: Divert water flow in August 2008 during low flow and install a concrete floor in the 15' diameter stone arch under the old railroad grade in Westmoreland.

IS THE PROJECT LOCATED ALONG OR WITHIN A NH DESIGNATED RIVER (YES/NO)? No
(see NHWB Manual, Appendix R for list of designated rivers)

WILL CONSTRUCTION OCCUR DURING LOW-FLOW PERIODS (JULY 15 - OCT 1)? Yes

WILL THIS PROJECT INVOLVE UNCONFINED IN-STREAM CONSTRUCTION WORK? No

Revised November, 1997

s:\brian\docs\wetlands applications submitted\2005 and prior\westmoreland arch culvert collapse\2008 arch dot permit app.doc

9. Area, volumetric and/or linear impact of proposed work within N.H. Wetlands Bureau jurisdiction (eg., lakes, ponds, streams, wetlands, dunes, tidal buffer zone, etc.)

- a. Estimated area of permanent impacts within wetlands 2475 sq. ft.
- b. Estimated area of permanent impacts within non-wetland bank 0 sq. ft.
- c. Estimated area of permanent impacts within the upland portion of the Tidal Buffer Zone 0 sq. ft.
- d. Estimated area of temporary impacts 500 sq. ft.
- e. Estimated total area of all proposed work 2975 sq. ft. (in N.H. Wetlands Bureau jurisdiction).
- f. Estimated length of permanent impacts to banks 0 ft.
- g. Estimated length of permanent impacts to channel 165 ft.
- h. Estimated volume of impacts in Public Waters 0 cu. yd.
- i. Final deposition of dredged material N/A.
- j. Is proposed disposal site in wetlands (yes/no)? NO.
- k. If a channel is to be constructed, or a culvert or a bridge is to be installed, give the distance the flow of water is to be rerouted 0 ft.
- l. If dock or similar structure: length ft.; width ft.; total area of impact sq. ft.
- m. If waterfront project, indicate total length of shoreline frontage ft.
- n. If wall, riprap, beach, or similar project, indicate the length of proposed shoreline impact 0 ft.

10. **FILING FEE:** A check or money order made out to the DES Wetlands Bureau shall accompany the application. The minimum fee is \$50. MINOR and MAJOR PROJECTS are charged at the rate of: \$0.04 per square foot of requested impact (if less than \$50, the minimum fee applies); and/or \$100 per requested boat slip. The fee is based on the requested impact, not the approved impact. If an applicant is unsure of the correct fee, the application may be submitted with a \$50 minimum fee and the balance will be billed. The application will not be reviewed until the fee is paid in full.

The following are examples of projects that would qualify as minimum impact. A comprehensive definition of minimum impact is found in Wt 303.04 of the New Hampshire Administrative Code.

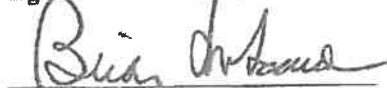
1. A seasonal pier not to exceed 6' in width, or 30' in length (4' X 20' in lakes less than 1000 acres) provided it is the only structure on the frontage.
2. Repair or replacement of an existing structure with no change in size, location, or configuration.
3. Most driveway crossings of small streams (less than 10 feet wide bank to bank) or narrow freshwater wetlands (less than 50 feet wide; not in bogs or marshes) to access an isolated piece of property.
4. Maintenance dredging within original bounds of a legally constructed project.

APPLICANT SIGNATURE. SIGNATURE BELOW CERTIFIES THAT: 1.) all abutters have been identified in accordance with the definition given in the general instructions sheet; 2.) those abutters have been sent notice by CERTIFIED MAIL; 3.) the applicant has read, and provided, the REQUIRED INFORMATION outlined in rule Wt 302.04 and listed on the Checklist for Preparing an NHDES Wetlands Bureau Application ; 4.) The applicant has read, and understands, Rule Wt 302.03 and has chosen the least impacting alternative; 5) The applicant(s) has reviewed the information to be submitted and that the information is, to their knowledge true and accurate; 6) The applicant understands that the willful submission of falsified or misrepresentative information to the New Hampshire Department of Environmental Services is a criminal act which may result in fines or imprisonment.

signature of owner

print name

date



Brian Lombard, PE

7-11-08

signature of authorized agent (if applicable)

print name

date

TOWN CLERK SIGNATURE. I hereby certify that the applicant has filed five applications, five detailed plans, and five U.S.G.S. location maps with the town/city of: N/A as required by Chapter 482-A:3 (amended 1991), and I have received and retained certified postal receipts (or copies) for all abutters identified by the applicant.

N/A
signature of town/city clerk

date

**STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION**

FROM: Brian Lombard, PE
Railroad Operations Engineer

AT: NHDOT
Bureau of Rail & Transit

SUBJECT: Westmoreland Arch Culvert
Supplemental Application Information Sheet

DATE: July 11, 2008

Question #5: We propose to install a concrete floor slab in the partially collapsed stone arch culvert under the old railroad grade in Westmoreland, NH. The concrete floor slab will be placed in sections.

We intend to do this work during low water flows in August 2008. Water flow in the stone arch will be diverted while the concrete floor slab is installed by one of the following methods depending on water volume and actual construction method used.

1. Sandbag the water at the culvert entrance and run the water through the work area in a culvert
2. Sandbag the water at the culvert entrance and pump the water through the arch
3. Divert the water flow with sandbags to one side of the arch while the concrete floor is constructed on the other side. Reverse the process once the first side is constructed.

We will also need to cross the stream at the culvert entrance with a small Bobcat type machine to regrade the bottom of the arch before the concrete is placed. The trips through the stream will be kept to a minimum and will be of short duration.

Question #6: This work needs to be done to keep the entire stone arch from collapsing. When the outlet end of the arch collapsed in the flood of 2005, it began the process of eroding the bottom of the arch at the new outlet causing the toe blocks on the sides of the arch to fall out and more of the arch to collapse.

We tried to stabilize the outlet end of the arch in 2005 when we received a Wetlands Permit to remove the pile of rocks from the stream bed and stabilize the side slopes. This work remains satisfactory, but the gravel floor of the arch is eroding

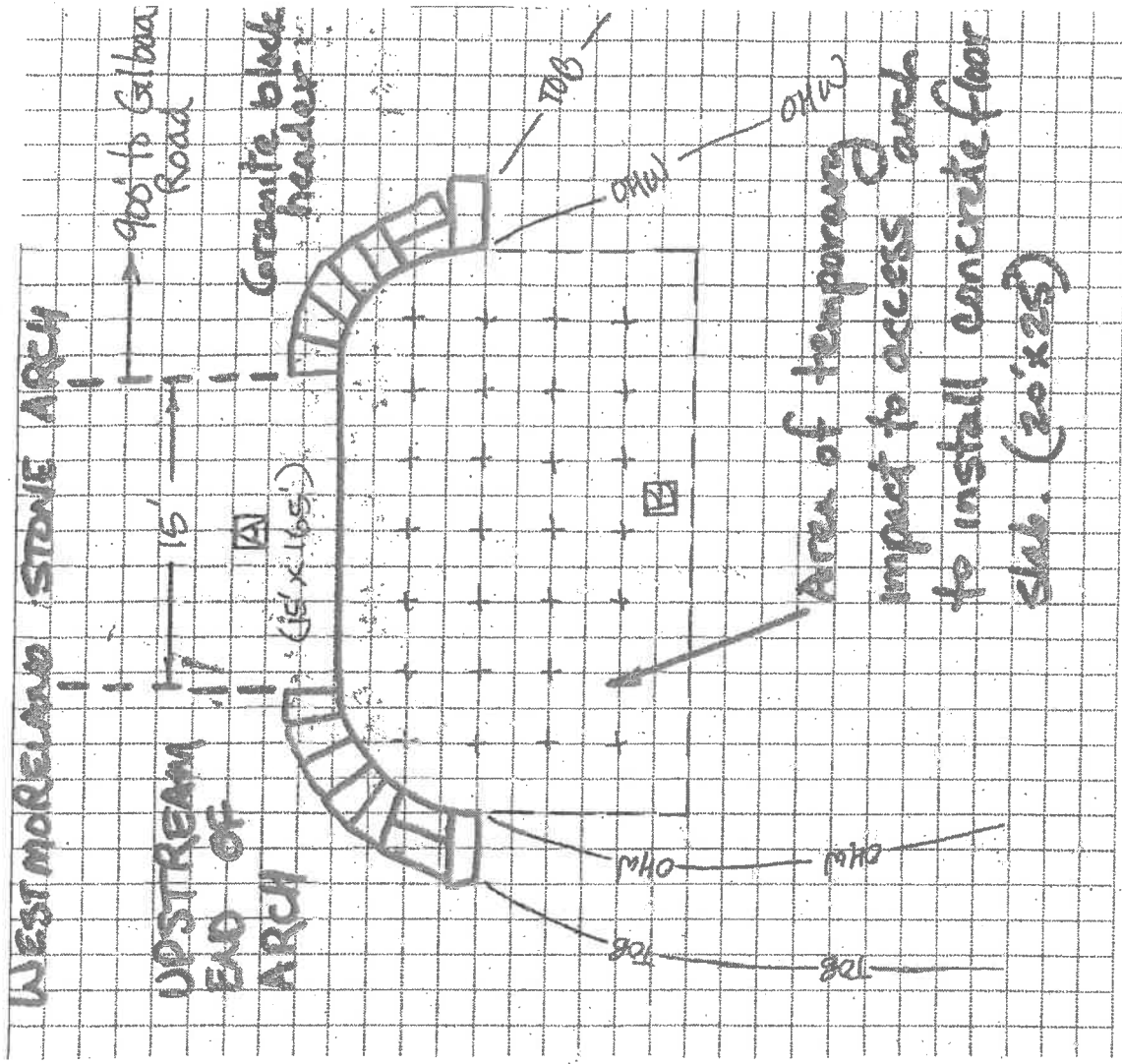
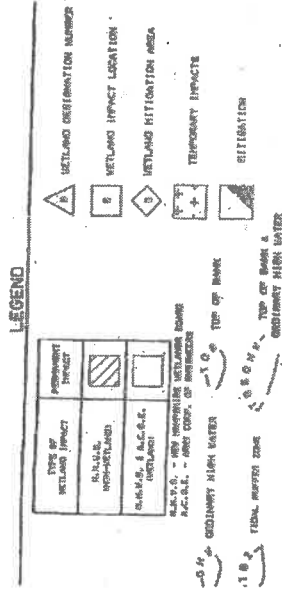
The only means available to us to rectify this situation is to place a concrete floor in the bottom of the arch.

PLAN VIEW

Not to Scale

Blomhard 7-11-08

INSTALL CONCRETE FLOOR
SUB IN 15'x165' STONE ARCH



HIGHWAY DESIGN
CALCULATION SHEET

PROJECT

66021A

PROJECT NO.

ROUTE

CALCULATED BY

DATE

CHECKED BY

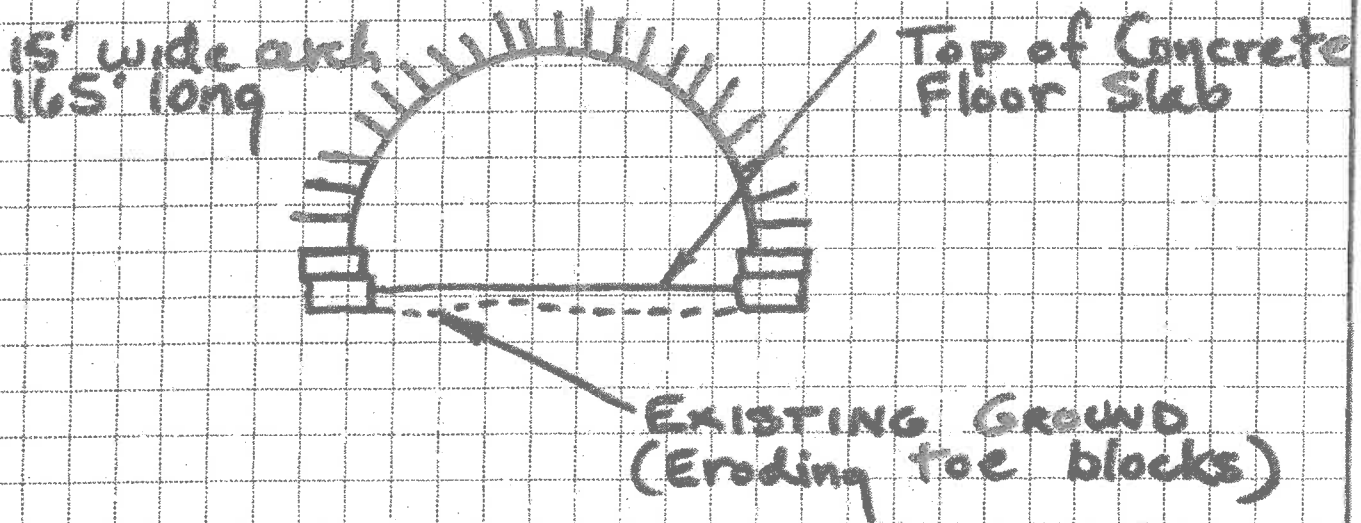
DATE

SUBJECT

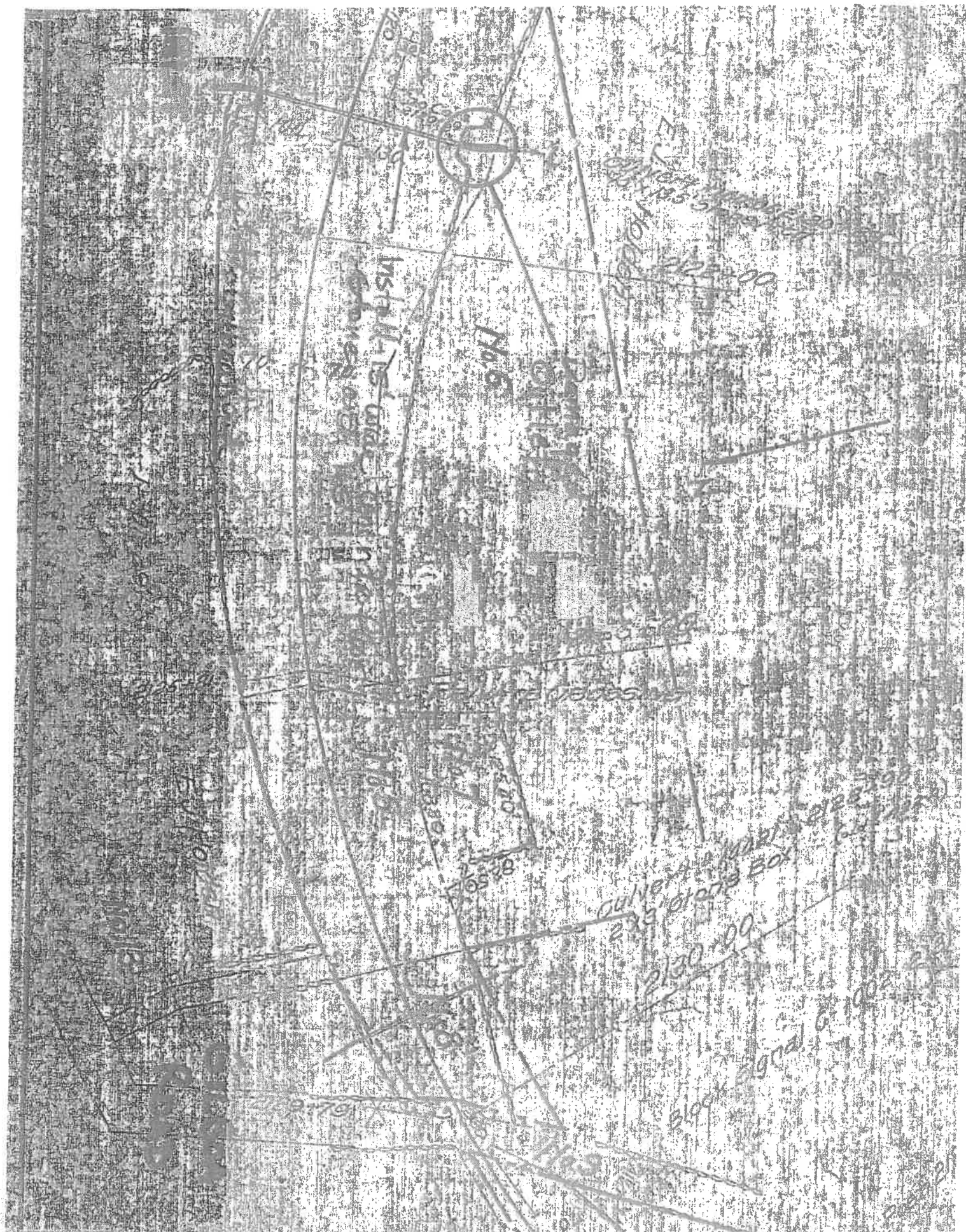
SHEET

OF

WESTMORELAND ARCH SECTION



Section view is typical of entire length of arch.





New Hampshire Natural Heritage Bureau

To: Christine Perron
NHDOT Bureau of Environment
7 Hazen Drive
Concord, NH 03302

Date: 7/11/2008

From: NH Natural Heritage Bureau

Re: Review by NH Natural Heritage Bureau of request dated 7/11/2008

NHB File ID: NHB08-1480

Applicant: Christine Perron

Description: Rail Line just east of Gilboa
Westmoreland

Project Categories:

Bank Stabilization: Repair bank erosion
Roads, Driveways, Bridges: Bridge

The NH Natural Heritage database has been checked for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government. We currently have no recorded occurrences for sensitive species near this project area.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

This review is valid through 7/11/2009.

**New Hampshire Department of Transportation
Bureau of Rail & Transit
Westmoreland, 66021A**

Env-Wt 302.04 Requirements for Application Evaluation

1. The need for the proposed impact;

The outlet end of the stone arch culvert collapsed during the 2005 flood event. The side slopes were stabilized after that event; however, the condition of the culvert has continued to deteriorate. The gravel floor of the arch is now eroding, causing several toe blocks to become dislodged. If this erosion continues, the entire culvert could collapse and threaten the integrity of the rail line.

2. The alternative proposed by the applicant is the one with the least impact to wetlands or surface waters on site;

The proposed project involves the placement of a concrete floor in the bottom of the stone arch to prevent further erosion and undermining of the toe blocks.

The do-nothing alternative would not address the ongoing erosion problem at this site and could result in culvert failure.

Rebuilding the arch is cost prohibitive and, therefore, is not a viable alternative.

3. The type/classification of the wetlands involved;

R3UB1 (perennial stream)

4. The relationship of the proposed wetlands to be impacted relative to nearby wetlands and surface waters;

The project is located on an unnamed perennial stream. The stream is a tributary to Mill Brook, which outlets into the Connecticut River several miles away.

5. The rarity of the wetland, surface water, sand dunes, or tidal buffer zone area;

The project is not located in or near any prime wetlands, designated rivers, or exemplary natural communities.

6. The surface area of the wetlands that will be impacted;

0 s.f. banks
2,475 s.f. wetland
500 s.f. temporary

7. The impact on plants, fish, and wildlife including:

- a. Rare, special concern species;
- b. State and federally listed threatened and endangered species;
- c. Species at the extremities of their ranges;
- d. Migratory fish and wildlife; and
- e. Exemplary natural communities identified by the New Hampshire Natural Heritage Inventory (NHI)- Department of Resources and Economic Development.

The results of the NH Natural Heritage Bureau database review are enclosed. This review determined that no known rare species or exemplary natural communities are in the vicinity of the project area.

The concrete floor that is proposed will be level with the streambed upstream and downstream of the culvert and will not impede passage of aquatic species.

**New Hampshire Department of Transportation
Bureau of Rail & Transit
Westmoreland, 66021A**

Env-Wt 302.04 Requirements for Application Evaluation

8. **The impact of the proposed project on public commerce, navigation and recreation;**
The project will not impact public commerce, navigation, or recreation.
9. **The extent to which a project interferes with the aesthetic interests of the general public;**
The proposed project involves work on a historic stone arch located under the Cheshire Rail Line. The arch is located in the woods and is not visible from any public road. In the event that the arch is viewed by people walking through the woods, the proposed concrete floor will not impact the arch's historic appearance.
10. **The extent to which a project interferes with or obstructs public rights of passage or access;**
The project will not interfere with or obstruct public rights of passage or access.
11. **The impact upon abutting owners pursuant to RSA 482-A, II;**
This work will take place entirely within the right-of-way. Abutters will not be impacted.
12. **The benefit of a project to the health, safety, and well being of the general public;**
The project will prevent further deterioration and potential collapse of the stone arch culvert. Preventing a culvert failure will protect the integrity of the rail line and benefit the safety of users of this rail line.
13. **The impact of a proposed project on quantity or quality of surface and ground water;**
All appropriate BMPs will be utilized to ensure that water quality is not impacted by the construction of this project. The quantity of surface water will not be impacted.
14. **The potential of a proposed project to cause or increase flooding, erosion, or sedimentation;**
The purpose of this project is to prevent further erosion under the stone arch and sedimentation of the stream.
15. **The extent to which a project that located in surface waters reflects or redirects current or wave energy which might cause damage or hazards;**
The project will not redirect or reflect water currents.
16. **The cumulative impact that would result if all parties owning or abutting a portion of the affected wetland or wetland complex were also permitted alterations to the wetland proportional to the extent of their property rights;**
No private entities or abutters would sponsor this public works type project.
17. **The impact of the proposed project on the values and functions of the total wetland or wetland complex;**
The overall values and functions of this stream will not be altered by this project.
18. **The impact upon the value of the sites included in the latest published edition of the National Register of Natural Landmarks, or sites eligible for such publication;**
This project is not located in or near any Natural Landmarks listed on the National Register.
19. **The impact upon the value of areas named in acts of congress or presidential proclamations as national rivers, national wilderness areas, national lakeshores, and such areas as may be**

**New Hampshire Department of Transportation
Bureau of Rail & Transit
Westmoreland, 66021A**

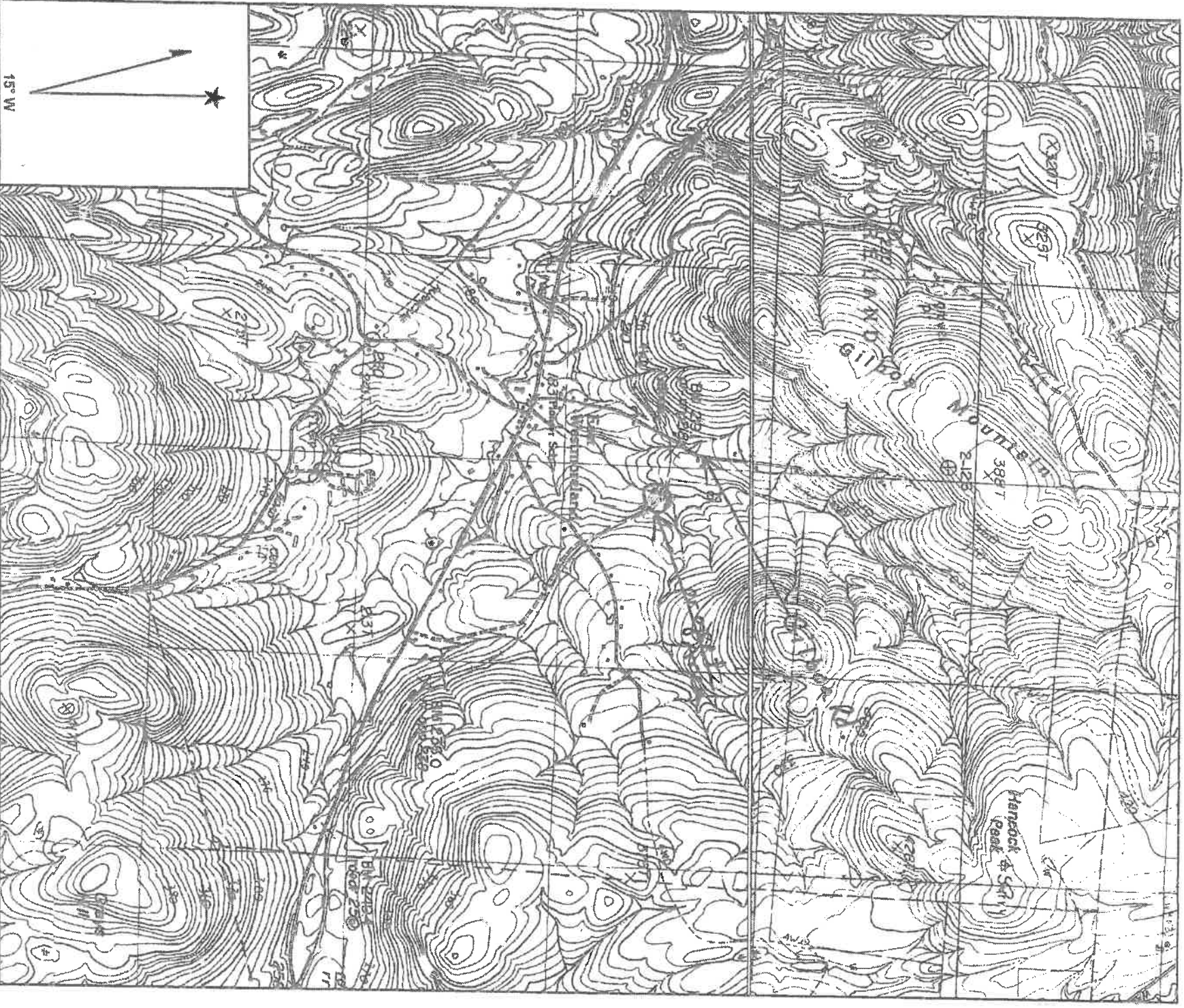
Env-Wt 302.04 Requirements for Application Evaluation

**established under federal, state, or municipal laws for similar and related purposes such as
estuarine and marine sanctuaries.**

No such areas exist in or near the subject project.

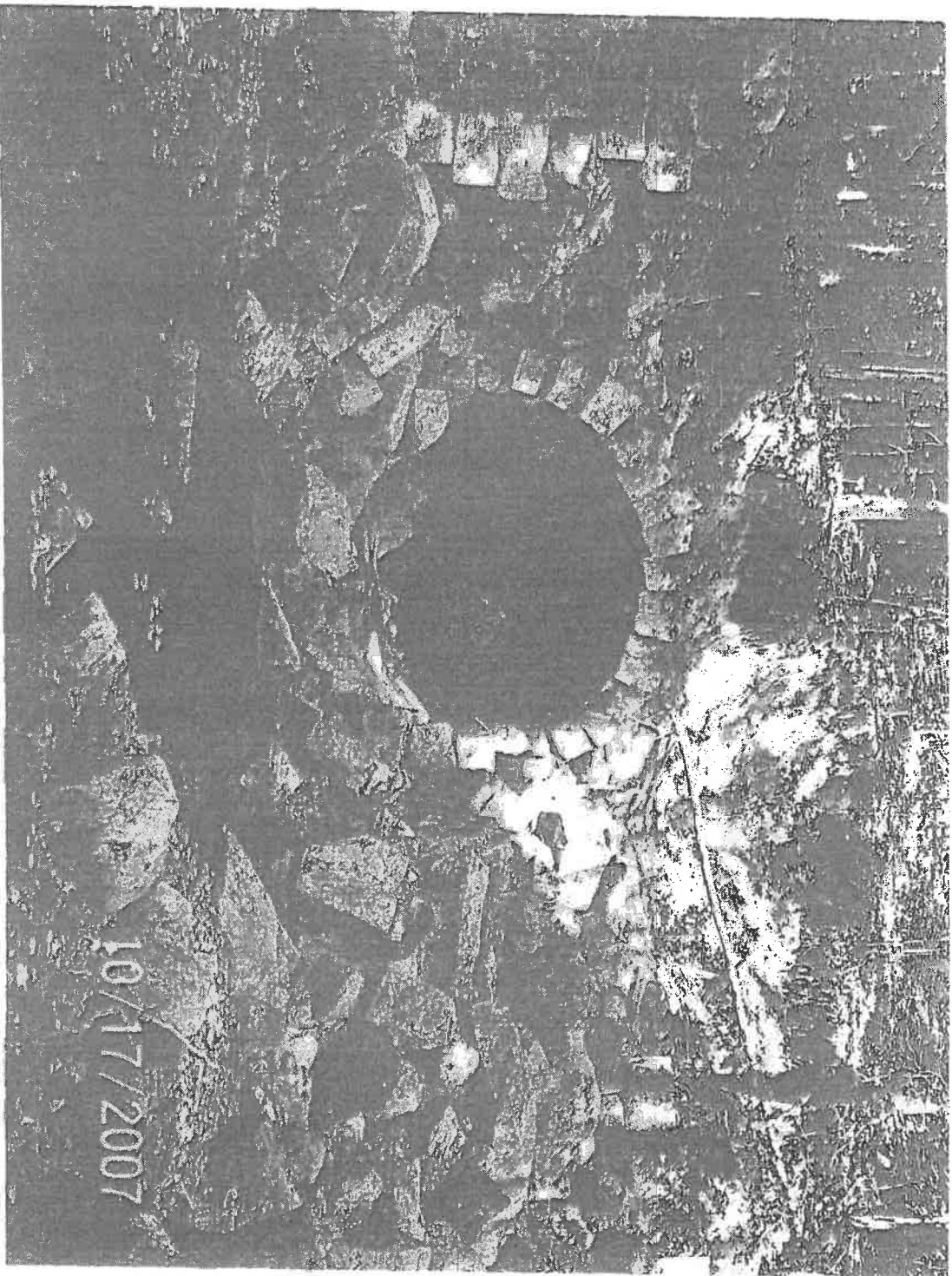
- 20. The degree to which a project redirects water from one watershed to another.**

Not applicable to this project.

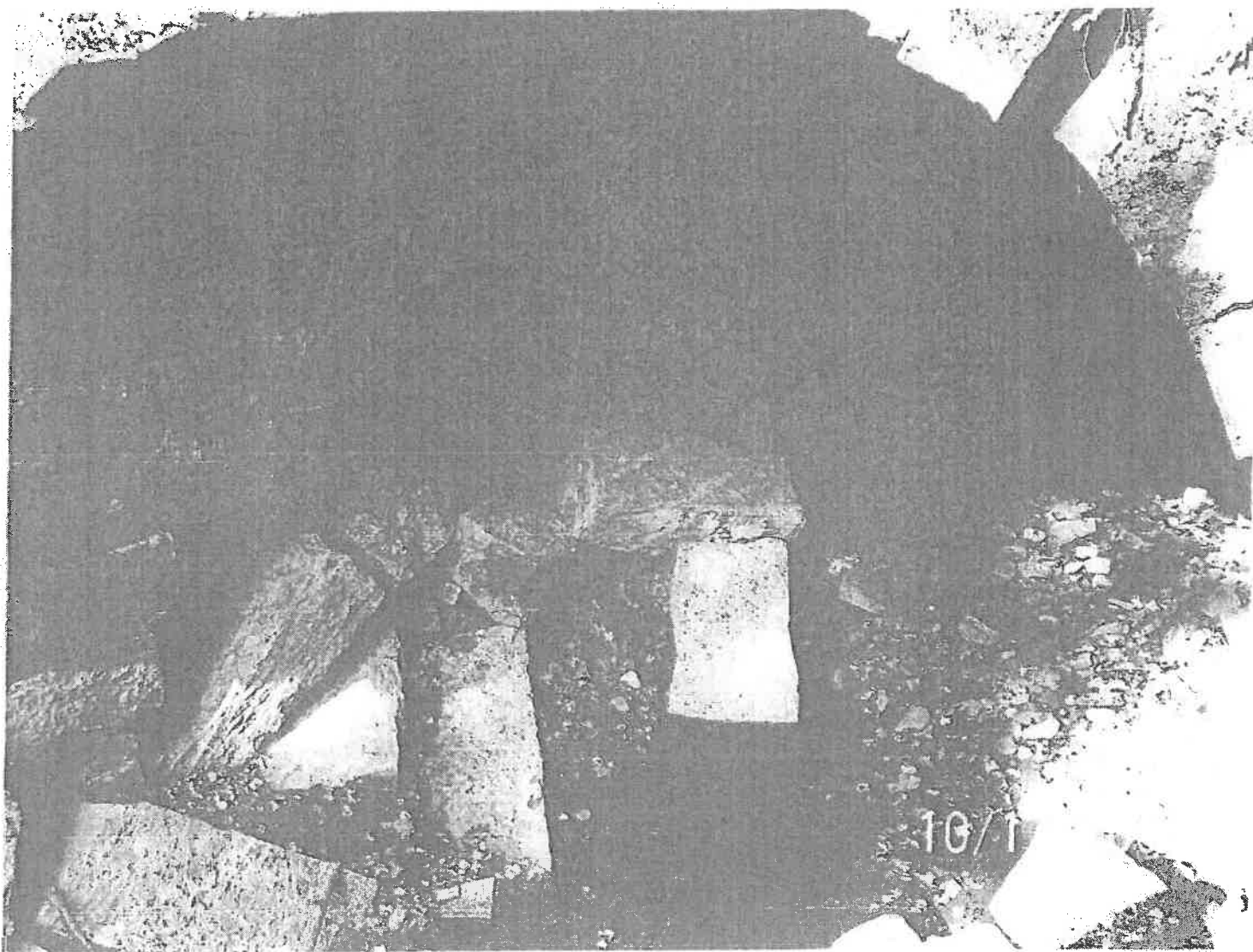


Name: KEENE
Date: 7/16/2008
Scale: 1 inch equals 2000 feet

Location: 042° 59' 34.17" N 072° 23' 05.63" W
Caption: Westmoreland, 66021A

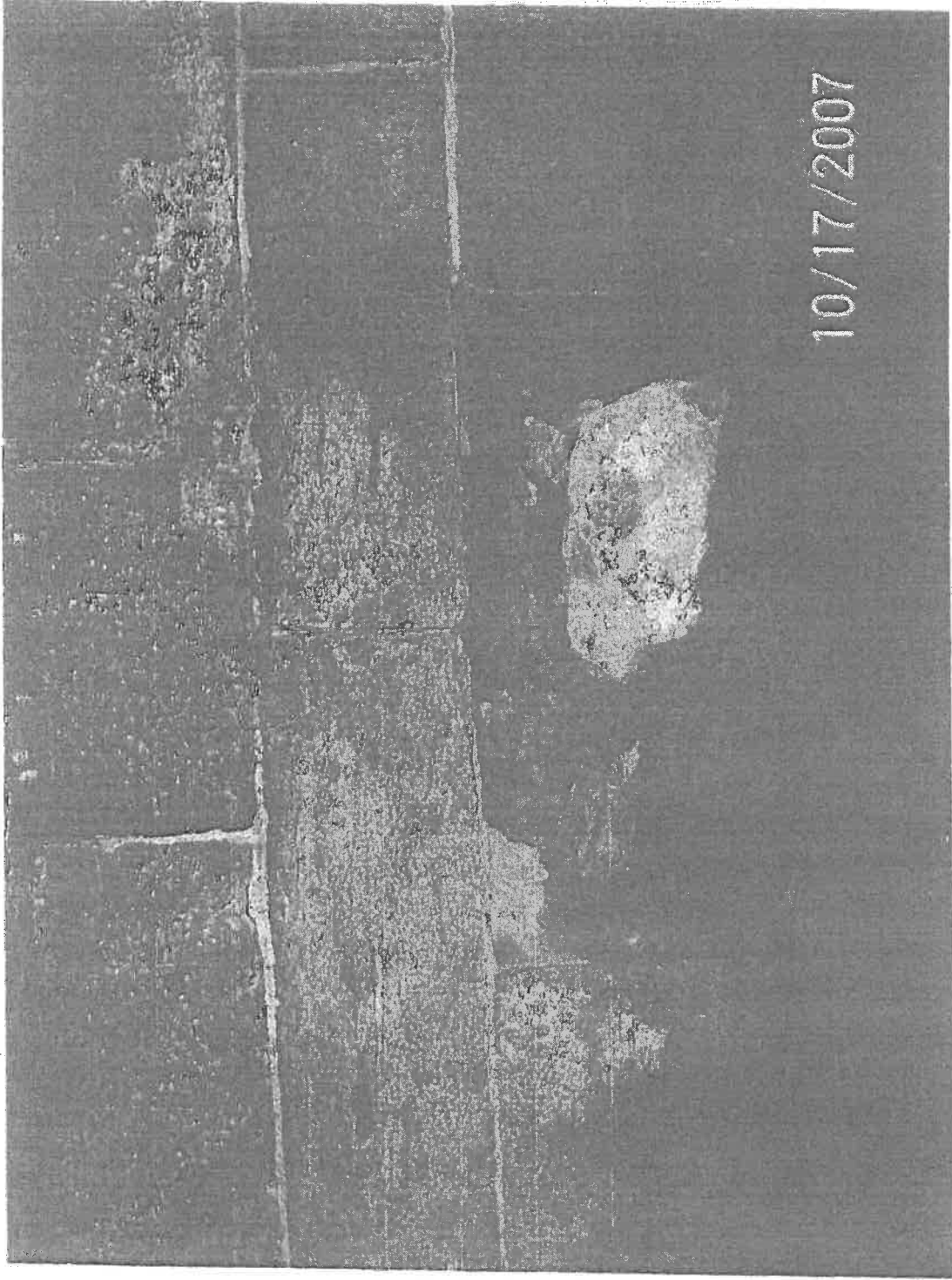


10/17/2007



10/1

10/17/2007



Christine Perron

From: Wilson, Linda [Linda.Wilson@dcr.nh.gov]
Sent: Monday, July 14, 2008 4:21 PM
To: Christine Perron; Joyce McKay; Sarah Gaulty
Subject: FW: Cheshire Rail Line - Stone Arch - Westmoreland

As anticipated, our DHR reply is Yes and Thanks to Joyce and Sarah, for their offer to complete an individual inventory form for the flood-damaged stone arch culvert in Westmoreland. As you'll see from Jim's and Mary Kate's messages, below, the DHR can help the effort, too.

Linda

From: Garvin, James
Sent: Monday, July 14, 2008 3:41 PM
To: Ryan, Mary Kate; Wilson, Linda; St.Louis, Christina; Gagne, Deborah; Feighner, Edna; Peterson, Nadine; Kress, Tanya
Subject: Cheshire Rail Line - Stone Arch - Westmoreland

I checked the survey file on the assumption that the entire Cheshire Railroad line had been determined eligible. That was not the case. We noted a need for "more information" and a fuller railroad context at a meeting of December 18, 1996. Thus, we would seem to need either to determine eligibility for this single culvert or for the entire line. All of you probably already knew thus.

There may be information on the Cheshire Railroad in the attached survey form for the great stone arch in South Keene that would assist Joyce and Sarah in completing a survey form for the damaged culvert in a short time.

I would be happy to help Joyce and Sarah with field work if needed

Jim

James L. Garvin
State Architectural Historian
New Hampshire Division of Historical Resources
19 Pillsbury Street--2nd Floor
Concord, NH 03301-3570
Tel.: 603-271-6436
E-mail: james.garvin@dcr.nh.gov

From: Ryan, Mary Kate
Sent: Monday, July 14, 2008 3:26 PM
To: Wilson, Linda; St.Louis, Christina; Gagne, Deborah; Feighner, Edna; Garvin, James; Ryan, Mary Kate; Peterson, Nadine; Kress, Tanya
Subject: RE: Cheshire Rail Line - Stone Arch - Westmoreland

I don't see any problem with Joyce and Sarah completing the inventory form. Our deadline is Wednesday for the next DOE meeting, but if this is an emergency project and Nadine, our resident culvert expert, will agree to review it with a little less time, we may be able to be a little flexible on the submission deadline.

Mary Kate Ryan, State Survey Coordinator
NH Division of Historical Resources
603.271.6435

7/16/2008

About the New Hampshire Division of Historical Resources: New Hampshire's "State Historic Preservation Office" was established in 1974 as the Division of Historical Resources. The historical, archaeological, architectural and cultural resources of New Hampshire are among its most important environmental assets. Historic preservation promotes the use, understanding and conservation of such resources for the education, inspiration, pleasure and enrichment of New Hampshire's citizens. For more information, visit us online at www.nh.gov/dhhr or by calling (603) 271-3483.

From: Wilson, Linda
Sent: Monday, July 14, 2008 3:15 PM
To: Christina St.Louis; Deborah Gagne; Edna Feighner; James L. Garvin; Mary Kate Ryan; Nadine Peterson; Tanya Kress
Subject: FW: Cheshire Rail Line - Stone Arch - Westmoreland
Importance: High

Joyce's proposal that she and/or Sarah complete the DHR inventory form for the stone arch culvert seems to be the best way to get the DOE done, given the limited time and funding available. Do you agree?

lrw

From: Christine Perron [mailto:CPerron@dot.state.nh.us]
Sent: Monday, July 14, 2008 8:57 AM
To: Wilson, Linda
Cc: Joyce McKay; Sarah Gaulty
Subject: Cheshire Rail Line - Stone Arch - Westmoreland
Importance: High

Hi Linda,

The Bureau of Rail & Transit has submitted a wetlands permit application (for both a state and federal permit) to install a concrete floor within a stone arch culvert under the Cheshire Rail Line in Westmoreland. The arch was damaged during the flood event in 2005, at which time it was reviewed by your office. The condition of the arch has continued to deteriorate - now the stream channel is starting to undermine the toe blocks inside the arch and several of these blocks have fallen out. Bridge maintenance inspectors would like to install a concrete floor to prevent the arch from becoming even more undermined and collapsing. This work needs to be done during low stream flow (August) and before the higher flows of fall and spring. The concrete floor will be 8 inches thick and cover 8 inches of the toe blocks. The rest of the arch will not be impacted by this work.

Since Rail & Transit has very limited funds available, Joyce has suggested that she and/or Sarah complete an individual form for this structure. As we need a decision about this before the next Cultural Resources meeting, I'm sending this email to find out if you concur with Joyce's recommendation.

I am attaching photos of the site. Please let me know if you have any questions or need additional information.

Thanks very much,
Christine

<<Image5.jpg>> <<Image6.jpg>> <<Image13.jpg>>

7/16/2008

Name: KEENE
Date: 7/16/2008
Scale: 1 inch equals 2000 feet

Location: 042° 59' 34.17" N 072° 23' 05.63" W
Caption: Westmoreland, 66021A



U.S. Army Corps of Engineers Programmatic General Permit (PGP) Appendix B Corps Secondary Impacts Checklist (for inland wetland/waterway fill projects in New Hampshire) 1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination. 2. All references to "work" include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc. 3. See PGP, GC-5 regarding single and complete projects. 4. Contact the Corps at (978) 318-8832 with any questions.

	Yes	No
1. Impaired Waters		
1.1 Will any work occur upstream within 1 mile upstream in the watershed of an impaired water? See www.des.state.nh.us/wmb/Section401/ to determine if there is an impaired water in the vicinity of your work area.*		X
2. Wetlands		
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200' of any proposed work?	X	
2.2 Are there proposed impacts to SAS, shellfish beds, special wetlands and vernal pools (see PGP, GC 26)? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) website, www.dred.state.nh.us/divisions/forestandlands/bureaus/naturalheritage , specifically the book Natural Community Systems of New Hampshire.		X
2.3 If wetland crossings are proposed, they are not adequately designed to maintain hydrology, sediment transport & wildlife passage.		X
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)		X
2.5 The overall project site is more than 40 acres.		X
2.6 What is the size of the existing impervious surface area?	N/A	
2.7 What is the size of the proposed impervious surface area?	N/A	
2.8 What is the % of the impervious area (new and existing) to the overall project site?	N/A	
3. Wildlife	Yes	No
3.1 Has the NHB determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require a NHB determination.)		X
3.2 Would work occur in an area identified by NH Fish and Game Department as "Highest Ranked Habitat by Ecological Condition in NH" (magenta areas on maps) or "Highest Ranked Habitat by Ecological Condition in biological region" (green areas on maps)? www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm . The map is currently available as a PDF for download that can be zoomed in on.*		X
3.3 Would work occur in an area identified as a "Conservation Focus Area" (purple areas). www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/conservation_focus.htm ? The map is currently available as a PDF for download that can be zoomed in on.*		X
3.4 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		X
3.5 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.6 If stream crossings are proposed, will they impede hydrology, sediment transport & wildlife passage. (Note: Stream crossings should be designed in accordance with the PGP, GC 21.)		X
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?		X
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?		

*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.

Please mail the completed form and required material to:

New Hampshire Division of Historical Resources
State Historic Preservation Office
Attention: Review & Compliance
19 Pillsbury Street, Concord, NH 03301-3570

DHR Use Only

R&C # _____

Log In Date ____ / ____ / ____

Response Date ____ / ____ / ____

Sent Date ____ / ____ / ____

Request for Project Review by the New Hampshire Division of Historical Resources

01/08/2010

- ☐ This Project is funded by the American Recovery and Reinvestment Act of 2009
☐ This is a new submittal ☒ This is additional information relating to DHR Review #: 145

GENERAL PROJECT INFORMATION

Project Title **Westmoreland Stone Arch Bridge**

Project Location **East Westmoreland, NH along the Cheshire Railroad line**

Tax Map & Lot # **n/a**

NH State Plane - Feet Geographic Coordinates: Easting _____ Northing _____ WGS84 datum
(see RPR Manual and R&C FAQ's for help accessing this data)

Lead Federal Agency
(Agency providing funds, licenses, or permits)

Permit or Job Reference #

State Agency and Contact (if applicable) **Larry Keniston and Joyce McKay**

Permit or Job Reference # **66021A-2**

APPLICANT INFORMATION

Applicant Name **Larry Keniston and Joyce McKay**

Street Address **7 Hazen Drive** Phone Number **603-271-2468 and 603-271-4049**

City **Concord** State **NH** Zip **03263** Email **lkeniston@dot.state.nh.us and jmckay@dot.state.nh.us**

CONTACT PERSON TO RECEIVE RESPONSE

Name/Company **same as above**

Street Address _____ Phone Number _____

City _____ State _____ Zip _____ Email _____

Please refer to the Request for Project Review manual for direction on completing this form. Submit one copy of this project review form for each project for which review is requested. Include a self-addressed stamped envelope to expedite review response. Project submissions will not be accepted via facsimile or e-mail. This form is required. Review request form must be complete for review to begin. Incomplete forms will be sent back to the applicant without comment. Please be aware that this form may only initiate consultation. For some projects, the Division of Historical Resources (DHR) may require additional information to complete our review. All items and supporting documentation submitted with a review request, including photographs and publications, must be retained by the DHR as part of its review records. Items to be kept confidential should be clearly identified. For questions regarding the DHR review process, please visit our website at: <http://www.nh.gov/nhdhr/review> or contact the R&C Specialist at 603.271.3558.

PROJECT BOUNDARIES AND DESCRIPTION

PROJECTS CANNOT BE PROCESSED WITHOUT THIS INFORMATION

REQUIRED

- ☒ Attach the relevant portion of a 7.5' USGS Map (photocopied or computer-generated) **indicating the defined project boundary.**
- ☒ Attach a detailed written description of the proposed project. Include: (1) a narrative description of the proposed project; (2) site plan; (3) photos and description of the proposed work if the project involves rehabilitation, demolition, additions, or alterations to existing buildings or structures; and (4) a photocopy of the relevant portion of a soils map (if accessible) for ground-disturbing projects.

Architecture

Are there any buildings or structures within the project area? ☒ Yes ☐ No

If yes, submit all of the following information:

Approximate age(s): ca. 1848

- ☐ Photographs of **each** building located within the project area along with a photo key. Include streetscape images if applicable. (Digital photographs are accepted. All photographs must be clear, crisp and focused)
- ☐ DHR file review conducted on

***Photographs and maps were provided at the Cultural Resource meeting on 1/7/2010, in addition to the information contained in the Individual Inventory Form, WES0006, reviewed by your office on 10/8/2008.**

An additional set of photographs of the 2009 collapse are being sent via-state mail, 1/8/2010.

Please note that as part of the review process, the DHR may request an architectural survey or other additional information.

Archaeology

Does the proposed undertaking involve ground-disturbing activity? ☒ Yes ☐ No

If yes, submit all of the following information:

- ☒ Project specific map and/or preliminary site plan that fully describes the project boundaries and areas of proposed excavation.
- ☒ Description of current and previous land use and disturbances.
- ☐ Any available information concerning known or suspected archaeological resources within the project area.

Please note that as part of the review process, the DHR may request an archaeological survey or other additional information.

DHR COMMENT

This Space for Division of Historical Resources Use Only

☐ No Potential to cause Effects ☐ Additional information is needed in order to complete our review
☐ No Adverse Effect ☐ No Historic Properties Affected ☐ Adverse Effect

Comments: _____

If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation.

Authorized Signature: _____ Date: _____

September 2009

Project Description:

The project is in Westmoreland on the Cheshire Branch railroad corridor. It involves lowering a RR embankment about 20 feet vertically and dismantling about a 40-foot section of an existing stone box culvert. Trails Bureau (DRED) staff has cut the trees on the failing slope in order to prevent further tree root action in the immediate vicinity of the outlet. The area around the hole where the tree went through the culvert is precarious and above it is all sloughed sand. It is doubtful we would be able to save any of the culvert before the hole that was created by the tree. Although there is still room for water to pass around the root ball, the root ball is taking up significant area inside the culvert. The top of the tree was cut off, but the root ball and 'stump' left will not be moved easily. The proposed grade drop was looked at onsite and it seems we would need to drop the existing RR grade approximately 20-25 feet and shift the abandoned RR alignment horizontally approximately the same distance laterally.

BUREAU OF ENVIRONMENT CONFERENCE REPORT

SUBJECT: Monthly SHPO-FHWA-ACOE-NHDOT Cultural Resources Meeting

DATE OF CONFERENCES: January 7 and 14, 2010

LOCATION OF CONFERENCE: John O. Morton Building

ATTENDED BY:

NHDOT

Mike Dugas
Jill Edelmann
Jon Evans
Jon Hebert
Larry Keniston
Marc Laurin
Don Lyford
Jim Marshall
Joyce McKay
Kit Morgan
Kevin Nyhan
David Scott
Matt Urban

Tony Weatherbee
Alex Vogt

**Federal Highway
Administration**
Jamie Sikora

NHDHR

Dick Boisvert
Edna Feighner
Beth Muzzey
Linda Wilson
Christine Varnold

City of Berlin

Pamela Laflamme
Pat McQueen

CMA Engineers
Jeffrey Murray

FNRT

Alex Bernhard
Dick McKay

KVP, LLC
Ray Korber
Bob Rook

Town of Littleton
Chuck Connell

Town of Milford
William Parker

**Town of New
Castle**
Brad Meade

VHB
Gorden Edington
Sally Gunn

(When viewing these minutes online, click on an attendee to send an e-mail)

PROJECTS/PRESENTATIONS REVIEWED THIS MONTH:

(minutes on subsequent pages)

Laconia, X-A000(884), 15691	1
New Castle, X-A000(555), 14827 (ARRA funded)	2
Moultonborough, X-A000(932), 15710	3
Westmoreland	5
Alton, X-A000(500), 14121A	6
Winchester, DPR-BRF-X-0111(005), 12906	6
Littleton, X-A000(298), 14307	7
New Ipswich, X-A000(403), 14465	9
Enfield, BRO-X-T-0145(003), 12967	10
Berlin, X-A000(052), 12958B	11

(When viewing these minutes online, click on a project to zoom to the minutes for that project)

January 7, 2010

Laconia, X-A000(884), 15691

Participants: Jon Evans and Mike Dugas

Joyce McKay began by reviewing the project, which involves the reconstruction of the US Route 3 and NH Route 11B intersection in Laconia. The proposed alternative involves the construction of a roundabout at the subject intersection.

to NH Route 25. Deceleration in NH Route 25 eastbound from this movement causes vehicles to queue on NH Route 25 and leaves the turning vehicle susceptible to a rear end collision. Eastbound NH Route 25 vehicles cannot safely maneuver around a right-turning vehicle entering Fox Hollow Road due to the limited sight distance created by the combination horizontal and vertical curves.

Proposed Project: An evaluation was completed on appropriate improvements at the current 45 MPH design speed. At this design speed, the existing vertical profile meets the 45 MPH criteria and can be maintained. A left westbound turn lane and right turn taper at Fox Hollow Road are proposed to address the safety issues noted above. The typical section at the Fox Hollow Road intersection would include (2) 11-foot travel ways, (1) 12-foot left turn lane, and 4-foot wide shoulders for a total pavement footprint of 42 feet. The existing pavement footprint is 26 feet. This will require the reconstruction of approximately 1500 feet of roadway to facilitate the proper taper from the new widened section to the existing roadway width at the project limits. It is important to note that the horizontal curvature of NH Route 25, existing earthen embankments and residential buildings on the north side of NH Route 25 prevent the attainment of the required stopping sight distance without significant impacts to abutting properties.

Major items of construction will include: clearing, grubbing and removal of trees; installation of temporary bypass lane; excavation of side slope areas to accommodate the widening; installation of aggregate base course materials; reconstruction of side slopes through the cut section; re-grading private drives; relocation of utility poles, signs, etc.; removal of existing drainage structures and installation of new drainage system; placement of pavement and pavement markings; and site restoration. Improvements at Fox Hollow road will include a widening to accommodate the eastbound right turn taper and to open the entrance to NH Route 25 to improve sight distance.

There was discussion regarding additional information requested by committee members. The information includes:

- Complete a Phase 1A archaeological review. KVPartners will confer with the Town regarding retaining a consultant to complete this work. E. Feighner noted the list of qualified historical archaeologists on its website.
- Submit photographs of the buildings along the roadway. There are no impacts to the buildings themselves but they are potential impacts to the front section of the properties within the project limits. KVPartners will submit the requested clear photographs.

Westmoreland

Participants: Larry Keniston

Larry Keniston presented the ca. 1848 East Westmoreland large stone arch culvert, along the now abandoned Cheshire railroad corridor. This project was reviewed by NHDHR in October 2008 after flood damage had caused the outlet end to collapse. More damage was suffered in 2009. L. Keniston provided photographic documentation of this damage to the committee members. A large hole was formed where a tree had fallen through the arch. After consulting with Bridge Maintenance, the Rails Bureau found the best plan of action to save this arch culvert was to remove approximately 40' of the arch structure at the outlet end, and lower the grade above the culvert approximately 20'. They would pour a new concrete wing wall at the outlet end. It was also proposed that the area would be stripped of any vegetation to make sure that roots do not disrupt the culvert in the future. L. Wilson noted that the

proposed changes would be an adverse effect on the resource, however she asked that she present the project at DHR's next staff meeting on 1/11/10, and their discussions/conclusions will be presented to NHDOT. [DHR subsequently requested that the Bureau of Rails hire a qualified stone mason to examine the arch and make recommendations for rebuilding the arch. DHR suggested John Wastrum.]

January 14, 2010

Alton, X-A000(500), 14121A

Participants: Kevin Nyhan, Don Lyford, Jim Kirouac, Chris Girard, NHDOT

Kevin Nyhan reviewed this project, following up from the last meeting. K. Nyhan detailed that there are several trees along the south side of the road that will be impacted by construction. Two trees in front of parcel 222, within the right-of-way, would be pruned. This was determined not to be a problem. One tree in front of parcel 223, within the right-of-way, would be removed. If this tree were to be greater than 50 years old, it may contribute to the historic property. However, Chris Girard, a certified arborist, indicated that the tree was no older than 40 years. This was determined to be not a problem. In addition to these trees, an additional two trees were identified for removal for improving drainage in front of parcel 226, within the right-of-way, across the road. In Chris' opinion, these trees, which are mature silver maples, are older than 50 years old. As the associated property is potentially historic, the property will need to be evaluated. Two additional trees on this property were also noted to having possible impacts depending on the root system, however it was unknown if these trees would be impacted until construction started.

Looking at an aerial map, K. Nyhan and J. McKay indicated that the project area is likely on the outskirts of a large historic district in Alton. K. Nyhan indicated that the original project area form did not extend as far as the project goes today, and if the project area form were being done today, it would have. However, the project is late in design and K. Nyhan suggested that in order to comply with Section 106, parcel 226 be evaluated with an individual inventory form. The form would determine the individual eligibility of the property and how it would contribute to an overall district, without determining if there is a formal district. The Department utilized this approach for the Durham-Newmarket, 13080 and Derry, 13249 projects. This request came as a result of the project not needing any permanent easements or acquisitions from properties in the project area.

Everyone agreed to this approach. The project was determined to have no adverse effect and no 4(f), and there would be no Section 4(f) uses. The former, no historic properties affected memo would be modified. Additionally, the Department agreed to save the potentially impacted trees on parcel 226 if possible. Its ability to save them would not be known until after construction. If this effort does not work, the Department would confer with the property owner and replace them with reasonably substantial trees of a similar species. They would be planted to avoid utility lines.

Winchester, DPR-BRF-X-0111(005), 12906

Participants: Mike Dugas, Don Lyford, and David Scott NHDOT

Mike Dugas started the presentation with a review of the different project alternatives for the replacement/rehabilitation of the ca. 1935 3-span continuous girder bridge with parabolic haunches. This project went through the CSS process. It was determined by the community that alternative 9 was

BUREAU OF ENVIRONMENT CONFERENCE REPORT

SUBJECT: Monthly SHPO-FHWA-ACOE-NHDOT Cultural Resources Meeting

DATE OF CONFERENCES: February 4 and 11, 2010

LOCATION OF CONFERENCE: John O. Morton Building

ATTENDED BY:

NHDOT	Kevin Nyhan	DRED	Town of Dublin
Chris Carucci	Christine Perron	Jennifer Codispoti	Ed Germain
Jill Edelmann	David Scott		Bill Raymond
Jon Evans	Jason Tremblay	Bureau of Public	FST Engineers
Cathy Goodmen	Matt Urban	Works	Kevin Gagne
Doug Gosling		David Goulet	
Bob Hudson	Federal Highway	Dina Pinnell	
Tom Jameson	Administration		IAC, LLC
Doug King	Jamie Sikora	City of Berlin	Kathy Wheeler
Larry Keniston	Martha Alunkal	Pamela Laflamme	
Marc Laurin		(via phone)	Past Designs
Steve Liakos	NHDHR		Lucinda Brockway
Don Lyford	Edna Feighner	CLD Engineers	
Joyce McKay	Jim Garvin	Jason Beaudet	Smart Associates
Phil Miles	Beth Muzzey	Daniel Hudson	Jennifer Riordan
Kit Morgan	Linda Wilson		

(When viewing these minutes online, click on an attendee to send an e-mail)

PROJECTS/PRESENTATIONS REVIEWED THIS MONTH:

(minutes on subsequent pages)

Dover, X-A000(013), 15870	2
Stratham, X-A000(848), 15653	2
Plaistow, X-A000(849), 15654	3
Dublin X-A000(300), 14318 and X-A000(301), 14319	4
Advertisement of Buildings for Sale	5
New Castle-Portsmouth, X-A001(037), 15916	7
Hopkinton, STP-TE-X-000S(450) 13483A	7
Manchester-Hooksett, A000(461), 14604	7
Westmoreland/Walpole	8
Woodstock, X-A001(019), 15885	10
Concord, A001(024), 15902 (ARRA2)	10
Andover, X-A000(023), 15901 (ARRA2)	11
Manchester, 14966	11
Milton, X-A001(027), 15905 (ARRA2)	13
Berlin, X-A000(052), 12958B	13
Franklin 15860	14
Bath 14290	14
New Ipswich, X-A000(403), 14465	15

(When viewing these minutes online, click on a project to zoom to the minutes for that project)

drainage, which requires excavation in certain areas up to a depth of 9 feet. In addition, topsoil in these areas would be removed prior to placing fill for the crossovers.

Edna said this area has landscape features that are similar to nearby archaeological sites. Buried resources have been found elsewhere in the median of I-93. She was concerned about staging, excavation, and even the stripping of topsoil, and asked for a Phase IA/IB survey within the median. J. McKay recommended that the median be surveyed along the entire length of the project instead of focusing on areas of proposed excavation only. She thought that Phase I could be completed prior to the May advertising date. Any resources that are found during Phase IB may require additional survey in Phase II/III or may require avoidance or recovery.

Westmoreland/Walpole

**Participants: Larry Keniston, Doug Gosling, Kit Morgan, and Christine Perron, NHDOT
Jennifer Codispoti, DRED**

Larry Keniston, Doug Gosling, and Kit Morgan discussed two failing stone arch culverts on the Cheshire Branch RR. The rail line is owned by the State of NH and cooperatively managed by NHDOT and DRED. There is a significant amount of fill over each of these culverts, and both structures are starting to collapse.

Westmoreland

This arch culvert is 170' in length. The outlet has been scoured over time and started collapsing in 2003. Some stabilization was undertaken at that time, and a concrete invert was installed where no scour had yet occurred. Currently, much of the headwall is gone and stones are falling out 40' into the culvert. The concrete invert has prevented deterioration further into the culvert. Trees and roots have fallen through the structure near the outlet, and the hydraulic capacity of the culvert is now substantially reduced. Rail & Transit and Bridge Maintenance propose to take 40' off the outlet end of the culvert and reduce the slope from 1 ½ :1 to 2:1 by lowering the rail corridor 20' over a 500' section (250' on either side of the culvert). The inlet portion of the culvert is undamaged, and no work is proposed within 60' of the inlet. Shortening the culvert by 40' at the outlet end would remove only the damaged portion. A new concrete header and wingwalls would be constructed. A contractor would do excavation. Regardless of what is done to the culvert, the fill over the structure will need to be removed.

Beth Muzzey asked why concrete would be used for the new header and wingwalls. D. Gosling explained that concrete could be installed quickly when compared to stone work. While the structure could be repaired in kind, he estimates that doing so would take a year and would cost approx. \$1 million. He cannot commit his crew to doing work of this magnitude, and there is no funding for such work.

B. Muzzey asked how these structures were constructed. D. Gosling said that construction of these structures required real craftsmen. Scaffolding or an arched form was used to place stones, the keystone was set in place, and the structure was then loaded with fill to hold the stones in place. Forty feet of fill or more was placed over these structures. D. Gosling noted that this large amount of fill is a concern with these failing culverts. The large amount of fill creates a situation similar to the Warren River in Alstead when a pipe plugged during a 100-year flood event. Water

ponded behind the pipe and eventually washed out the fill and caused major downstream impacts. With the coming snow melt and spring rains, there is a serious concern that the failing stone arch culverts will lead to similar flood event. It was further noted that the fill typically used for the railroads was the material that was easiest to get, which means that most of the fill is sandy and therefore more susceptible to getting washed out.

Walpole

This failing arch culvert was discovered about a week ago. The middle of the structure has deteriorated, and material and trees are now falling into the structure, creating a 100' diameter sinkhole. DRED has cut all trees from around the sinkhole. The culvert is approximately 75% blocked. The stream through this culvert is more substantial than the stream through the Westmoreland structure, with a depth of about 4'. Because this damage was only recently discovered, the Department has not yet designed a solution.

B. Muzzey asked if any other problems were known to exist along this line. Jen Codispoti said that nothing else has been found. She noted that her office has over 300 miles of recreation corridor to cover and a small staff. Problems are not usually found until they have become an issue for the trail.

Linda Wilson asked if these culverts were included in the DOT culvert survey, or in the TNC Ashuelot watershed culvert survey. Joyce McKay said that only highway culverts were surveyed by DOT. Christine Perron said that she would check with Doug Bechtel (TNC) to find out if these culverts were surveyed as part of the Ashuelot project.

B. Muzzey noted that the stone arch culverts are very historic features on the landscape and that the Cheshire Branch RR is eligible for the National Register. For these reasons, any repairs will need to follow the Section 106 process if a federal agency is involved. She stated that the damage to the Westmoreland culvert is an adverse effect. The repairs as proposed would be an adverse effect as well. While the repairs are beneficial to the structure, they would still take away from the original design. Other historic features of the Cheshire Branch include the fill and the grade of the rail line. The proposed repairs for Westmoreland do, at least, maintain continuity of the line. She explained that Section 106 requires avoidance, minimization, and mitigation of impacts to historic features. Reusing the remaining granite stones on the new header and wingwalls would minimize impacts. Mitigation may consist of a maintenance and monitoring plan for the Cheshire Branch.

There was much discussion about the feasibility of regular monitoring along the line to catch small failures while they can be repaired. J. Codispoti said that it would be too difficult to accomplish with her limited staff and she was reluctant to mandate user groups to monitor. L. Wilson noted that Cheshire County is the center of concern for stone structures in the state. There may be local groups interested in helping with monitoring. J. Codispoti agreed that this may be a good option, and L. Wilson agreed to get contact information for local groups.

It was reiterated that both of these pipes pose a serious safety concern. B. Muzzey stated that the Section 106 process does not interfere with public safety. However, DOT/DRED still need to work through the process for both culverts.

BUREAU OF ENVIRONMENT CONFERENCE REPORT

SUBJECT: Monthly SHPO-FHWA-ACOE-NHDOT Cultural Resources Meeting

DATE OF CONFERENCES: March 4 and 11, 2010

LOCATION OF CONFERENCE: John O. Morton Building

ATTENDED BY:

NHDOT	David Scott	CLD Engineers	City of Nashua
Mike Dugas	Matt Urban	Brian Pratt	Leon Kenison
Jill Edelmann			
Jon Evans	Federal Highway	CMA Engineers	Nashua RPC
Jon Hebert	Administration	Roch Larochelle	Tim Roache
Laurel Kenna	Jamie Sikora		
Larry Keniston		Dubois & King	VHB
Marc Laurin	NHDHR	Bob Durfee	Dayl Cohen
Brian Lombard	Edna Feighner		Frank O'Callaghan
Don Lyford	Jim Garvin	HSI	Bruce Tasker
Joyce McKay	Beth Muzzey	John Vancor	Pete Walker
Christine Perron	Linda Wilson		Rita Walsh
Peter Salo			

(When viewing these minutes online, click on an attendee to send an e-mail)

PROJECTS/PRESENTATIONS REVIEWED THIS MONTH:

(minutes on subsequent pages)

<i>March 4, 2010</i>	2
Newington-Dover, 11238L.....	2
Westboro Rail Yard, Lebanon	2
Winchester, DPR-BRF-X-0111(005), 12906	3
New Ipswich, 14465, X-A000(403)	4
Old Town Road Bridge, Carroll	4
Alton 14239 (no federal number)	5
Temple 14937 (no federal number)	5
Gilford 15890 (no federal number).....	6
<i>March 11, 2010</i>	6
Walpole Stone Arch Culvert.....	7
Westmoreland Stone Arch Culvert.....	8
Canaan 15942 (no federal number)	9
Walpole-Charlestown, X-A000(487), 14747	9
Winchester, DPR-BRF-X-0111(005), 12906	11
Berlin, X-A000(052), 12958B	13
Troy, X-A000(768, 769), 15537, 15337A.....	13
Durham, 15944 (no federal number)	14
Nashua, NRBD-5315(021), 10040A	15

(When viewing these minutes online, click on a project to zoom to the minutes for that project)

after the culvert is exposed, Jim Garvin and Linda Wilson will attend a field review for consultation prior to any change in the plan to repair the hole.

Until the fill is lowered, it was agreed that DRED Trails Bureau should run safety tape along the top of the embankment in the vicinity of the steep crater.

Westmoreland Stone Arch Culvert

Participants: Larry Keniston, Brian Lombard, and Christine Perron, NHDOT; Jim Garvin, NHDHR

Westmoreland Culvert at Mill Brook (Mile Marker 100.05):

Current Conditions

The current culvert is a 15-foot by 13.5-foot stone arch culvert, which is 180 feet long. The outlet headwall has collapsed. A hole in the culvert has developed about 40 feet upstream of the original outlet headwall location. Fill material, trees, and root balls are constricting the culvert opening. The existing headwall and hole are subject to continuing collapse. This is an unpredictable situation, which could possibly result in a culvert blockage, flooding upstream and a subsequent flood surge downstream. Since the damage is at the outlet end, it is possible that material subject to continued erosion might simply be washed downstream in a controlled fashion as head builds behind the material. This cycle of culvert and slope sloughing followed by small increases in head with material subsequently washed downstream under some control could be repeated for some time before any catastrophe occurs.

Solution

Immediate action includes the clearing of nearly an acre along the existing embankment lowering the fill about 20 feet at the culvert using a trail profile grade of 8% in order to return the trail to the existing grade. The excavation will take down the embankment from the outlet side of the existing steep slope. This will leave a lowered embankment centered horizontally about 30 feet upstream of the current embankment location. The slope at the outlet end will be laid back to a 2:1 slope. The work will remove about 25 additional linear feet of the culvert (10 linear feet is already at the brook bottom). The removal should go back beyond the existing hole to the point where an earlier repair project (2008) constructed a concrete floor in the culvert. This should stabilize the culvert at least temporarily by creating an angle of repose that will limit continued sloughing of the culvert and embankment slope.

As funds become available, a new concrete headwall can subsequently be constructed at the new outlet location.

In accordance with DHR request, geotextile will be placed below any fill (temporary or not) stored along the toe of the existing embankment slope. Any fill stored in the existing cut section need not include geotextile.

Mitigation

The mitigation is for the Department to field-review any potential damage to the four remaining large culverts along the line, excluding the Cheshire Branch Stone Arch over Branch River, which has already

been well documented. The field review will include qualified bridge or bridge maintenance personnel and participation, if feasible, by the Historical Society of Cheshire County with the intent that the Historical Society will perpetuate inspections into the future. It is especially unlikely that vigilant inspection of the Houghton Brook Culvert could have averted the current situation at Walpole. It is conceivable, however, that vigilant inspection of – along with early action to repair - the culvert at Westmoreland might have averted the current situation.

Canaan 15942 (no federal number)

Participants: Christine Perron, NHDOT

Christine Perron presented the project, which consists of rehabilitation of Bridge 178/141 on NH Route 118 Bridge over Indian River. The bridge is a 1950 I-Beam Bridge with a concrete deck (IBC). Work will include deck and approach rail replacement as well as structural steel repair. The bridge is 24' wide. In order to maintain one lane of traffic during construction, the bridge must be widened 2' downstream and 5' upstream to a width of 31' curb-to-curb. The abutments will be extended on the east side of the bridge and new wing walls will be constructed on the SE and SW corners. This is a state-funded Bridge Maintenance project that qualifies for coverage under the Army Corps programmatic permit.

The extent of disturbance beyond the area of existing roadway fill was not known at the time of the meeting. C. Perron will provide this information to Edna Feighner subsequent to the meeting, and Edna will review the RPR form and provide comments.

As a sixty-year-old structure, the bridge is potentially historic. Jim Garvin noted that the only unusual feature of the bridge is its degree of skew. He did not consider the bridge a pioneering example of its kind; however he noted that DHR did not have a full grasp on the full universe of IBC bridges in the state.

Linda Wilson suggested that a consensus determination of eligibility would avoid the DOE process for this bridge. J. Garvin and L. Wilson agreed to a consensus determination of eligibility.

J. Garvin stated that the project as proposed destroys the historic integrity of the bridge. He suggested that mitigation could consist of 1) providing DHR with copies of original plans and other documents on file for the bridge, and 2) documenting the bridge with large-format photography. If Bridge Maintenance cannot expend funds for large-format photography, then J. Garvin was agreeable to accepting 35mm black & white photography, which Joyce McKay could complete herself. C. Perron will follow up with Bridge Maintenance to determine a course of action.

Walpole-Charlestown, X-A000(487), 14747

Participants: Jonathan Evans and Don Lyford, NHDOT

This project involves the reconstruction of approximately 2.7 miles of NH Route 12 between Main Street in North Walpole and NH Route 12A in Charlestown. The preferred alternative involves shifting the

BUREAU OF ENVIRONMENT CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting

DATE OF CONFERENCE: April 21, 2010

LOCATION OF CONFERENCE: John O. Morton Building

ATTENDED BY:

NHDOT

C.R. Willeke
Christine Perron
Don Lyford
Jim Bowles
Jon Evans
Kevin Nyhan
Larry Keniston
Michelle Marshall
Randy Talon

Army Corps of Engineers

Rich Roach

EPA

Mark Kern

NHDES

Gino Infascelli
Laura Weit-Marcum
Lori Sommer

NH Fish and Game

Carol Henderson

NH DRED

Bill Gegas

Town of New London

Jessie Levine
Richard Lee

City of Rochester

Rich Healey

CT River Joint

Commissions

Sharon Francis

Srafford Regional Planning

Commission

Dan Camara

CHA

Kevin Thatcher

(When viewing these minutes online, click on an attendee to send an e-mail)

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH:

(minutes on subsequent pages)

Finalization of March 17, 2010 Meeting Minutes.....	2
Rochester, NHS-027-1(36), 10620D.....	2
New London, X-A000(764), 15534	2
Walpole-Charlestown, X-A000(487), 14747	4
Westmoreland & Walpole (no project number)	5

(When viewing these minutes online, click on a project to zoom to the minutes for that project)

NOTES ON CONFERENCE:

Finalization of March 17, 2010 Meeting Minutes

Jon Evans indicated that the minutes were sent out with little time for review and as a result the review period would be extended. He requested comments be sent to him by April 28, 2010. Comments received were incorporated into the March 17, 2010 meeting minutes which were finalized via e-mail April 29, 2010.

Rochester, NHS-027-1(36), 10620D

This project involves the reconstruction of NH Route 16 (Spaulding Turnpike) between Exits 11 and 16. Kevin Nyhan discussed updated wetland impacts for this project. The new DES permit permitted 21.5 acres (2 acres temporary) of impact. The following changes were being requested in a permit amendment:

1. The Department overcounted an area of 1,289 sf of permanent wetland impact at Wetland 30 in the 10620G contract.
2. The Department neglected to account for a 403 sf of permanent wetland impact at Wetland 23 for riprap along the bridge that carries NH Route 16 over Cocheco River.
3. The Department neglected to account for approximately 8,500 sf of temporary impacts under the Cocheco River bridge associated with the removal of the old bridge.
4. The Department proposes to temporarily impact an additional 1,673 sf of Wetland 23 (Cocheco River) for the installation of a causeway using a sheet pile coffer dam so that a crane can place steel for the new bridge. These impacts are anticipated to begin the end of May and last 6 weeks.

This results in a net decrease in permanent impacts of 886 sf, and a net increase in temporary impacts of 10,306 sf.

No one objected to the additional work and Gino indicated that he could issue an amendment in the next few weeks.

(project website) (NHWB Permit #: 2009-02922) *This project was previously reviewed on the following dates: 10/20/1999, 1/17/2001, 7/17/2002, 12/17/2003, 11/17/2004, 5/21/2008, 8/20/2008, 2/18/2009, 3/18/2009, 5/20/2009, 7/15/2009, 9/16/2009 & 10/29/2009.*

New London, X-A000(764), 15534

Kevin Thatcher opened his presentation on the Safe Routes to Schools project in New London. The project consists of a 1,600-foot sidewalk on Pleasant Street from Gould Road to Job Seamans Acres. Currently there is a 13' travel lane and a 3' shoulder; the proposal is for an 11' travel lane with a curb and 5' sidewalk. Therefore, there is no net increase in impervious area. K. Thatcher said that the sidewalk and curb will raise the grade of the shoulders, so fill will be necessary on the back slope. There are wetlands adjacent to the project, primarily in the middle portion of the

property was established through the NH Land and Community Heritage Investment Program (LCHIP) and the conservation easement is held by The Nature Conservancy (TNC). This conservation property was established for the purposes of protecting the northeastern bulrush (*scirpus ancistrochaetus*), a federally listed endangered species. J. Evans indicated that coordination with the necessary agencies and organizations on the project's impacts to this property was ongoing.

J. Evans indicated that the project would require wetland mitigation. He noted that coordination with DRED and LCHIP had indicated the presence of a property, approximately 1-acre in size, which is fully contained within the existing DRED/LCHIP property. He indicated that the possibility of placing this property into some form of conservation was something that the Department intends to look into further. With the exception of this property no other mitigation opportunities have been identified. He indicated that during the CSS process, the local conservation commissions and the Connecticut River Joint Commissions were involved in the preliminary design of the project, and to date had not indicated any mitigation opportunities. As a result, J. Evans indicated that the Department anticipates offsetting the necessary wetland impacts with a payment into the Aquatic Resource Mitigation Fund.

M. Kern and R. Roach indicated that they would like to see the Department examine the possibility of using bioengineering when designing the necessary slope treatments. C.R. indicated that the Department would look into these but indicated that they may result in increased wetland impacts.

Sharon Francis indicated that the Connecticut River Joint Commissions (CRJC) has been involved with this project from the very beginning and is in full support of the preferred alternative. She indicated that her recent interactions with the local public have indicated substantial public support for the chosen alternative. She also noted that the CRJC would like to see the Department look into the possibility of providing a small pull-off in the Meany's Cove area to allow parking for fishing, nature viewing or car-top boat launching.

(Project website) (NHB File #: NHB09-2261) *This project was previously reviewed on the following dates: 4/18/2007, 8/20/2008, 5/20/2009 & 10/29/2009.*

Westmoreland & Walpole (no project number)

Christine Perron gave an overview of a Rail & Transit project that will address two failing stone arch culverts along the Cheshire Branch rail line (now a recreational trail). Both culverts were constructed in the 1800s.

The Westmoreland culvert is 15' x 13.5' x 180' and carries an unnamed perennial stream that outlets into Mill Brook. This culvert started to fail following a flood event in 2003. Two permits have been issued to the NHDOT for this site: 2003-02440 (to remove granite blocks from the stream and stabilize the bank); 2008-01389 (to install a concrete floor with baffles). Due to lack of funding, Rail & Transit did not stabilize the failing outlet end of the culvert when damage first occurred. Earlier this year, a hole developed in the ceiling of the culvert near the outlet, which eventually allowed roots and sediment to fall into the culvert and cause a partial blockage. Rail &

Transit proposed a two-phased project to address this. The first phase, which is supposed to take place in the very near future, will consist of 1) clearing trees along the RR embankment and 2) removing fill to lower the embankment at the outlet. The second phase, which is contingent upon the availability of funds and approval from SHPO, will consist of removing approximately 30' of the collapsing culvert outlet and constructing a new headwall. The large amount of fill removed during the first phase will be placed in a RR cut to the east of the culvert. The trail in this location was cut off by a town road when a bridge was removed. The fill will be used to create a gradual ramp from the trail to the town road and will eventually reestablish trail connectivity. A photograph of the RR cut was shown and C. Perron said that it was her assessment that this wet portion of the abandoned trail does not meet the definition of a wetland or any other jurisdictional area. Gino Infascelli indicated that he would defer to her assessment of the site and a permit would not be required for placing the fill at this site. When the scope of the second phase of the project is determined, the project will be brought back to the Natural Resource agencies for review.

The Walpole culvert is 19' x 19' x 150' and carries Houghton Brook, which outlets into the Connecticut River approximately 1.5 miles downstream of the culvert. A portion of the culvert's ceiling near the inlet end has failed, creating a large sinkhole in the RR embankment. The interior of the culvert now contains a large pile of roots and sediment, which is causing a substantial blockage. The concern with both of these culverts is the potential for complete blockage to occur. Because of the substantial amount of fill over both culverts, a large amount of water could back up. If that water eventually burst through the rail corridor, substantial downstream flooding and damage could occur. Rail & Transit proposed a two-phased project to address the Walpole culvert. As with Westmoreland, the first phase will entail 1) the removal of fill from the top of the culvert and 2) the removal of the roots and sediment from inside the culvert. Excavated fill will be placed in another RR cut to the west of the culvert. The site does not contain wetlands and will not require a permit. C. Perron asked for confirmation that a permit would be needed to remove debris from inside the culvert. It was agreed that a permit would be needed. The second phase of the project, which is contingent upon the availability of funds and approval from SHPO, will consist of patching the hole in the culvert with concrete. This would require a permit for temporary impacts to the stream. Rich Roach indicated that the work in Walpole would be exempt from Army Corps jurisdiction.

(NHB File #: NHB10-0496) (NHWB Permit #: 2008-01389) *This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.*

BUREAU OF ENVIRONMENT CONFERENCE REPORT

SUBJECT: Monthly SHPO-FHWA-ACOE-NHDOT Cultural Resources Meeting

DATE OF CONFERENCES: July 14, 2011

LOCATION OF CONFERENCE: John O. Morton Building

ATTENDED BY:

NHDOT	Edna Feighner	Rhett Lamb	Duffy Monahon
Mike Dugas	Peter Michaud		Susan Phillips-
Jill Edelmann			Hungerford
Brian Lombard	Fay, Spofford &	Kleinfelder/SEA	
Joyce McKay	Thorndike	Michael Croteau	
Kevin Nyhan	Andrew Brassard	Sara Martin	Peterborough
Christine Perron	David McNamara		Library
Mark Richardson		Town of	David Simpson
Dave Smith	Hoyle Tanner	Peterborough	
C.R. Willeke	Stephen Haas	Rodney Bartlett	Peterborough
	Jason Lodge		Merchant
Federal Highway	Matt Low	Peterborough	Peter Robinson
Administration	John Mirabito	Heritage	
Jamie Sikora		Commission	VHB
	City of Keene	Robert Duhaime	Frank Koczalka
NHDHR	Kurt Blomquist	Debby Kaiser	Carol Weed
Laura Black		Sheila Kirkpatrick	

(When viewing these minutes online, click on an attendee to send an e-mail)

PROJECTS/PRESENTATIONS REVIEWED THIS MONTH:

(minutes on subsequent pages)

<i>July 14, 2011</i>	1
Peterborough X-A000(535), 14772A, X-A000(507) 14772, and 14933	1
Bradford, X-A001(089), 16032	3
Amherst, X-A001(264), 10136-C and Merrimack, X-A001(265), 10136-D	4
Cheshire Railroad, Walpole and Westmoreland	6
Franconia, surplus land	7
Barnstead, X-A001(174), 14121E	7
Newington Depot	7
Keene, Cheshire Railroad Stone Arch Bridge	8
Seabrook 15769 (no federal number)	8

(When viewing these minutes online, click on a project to zoom to the minutes for that project)

July 14, 2011

Peterborough X-A000(535), 14772A, X-A000(507) 14772, and 14933

Participants: Stephen Haas, Jason Lodge, Matt Low (mlow@hoyletanner.com) and John Mirabito, Hoyle Tanner; Rodney Bartlett, Town of Peterborough; C.R. Willeke, NHDOT; Robert Duhaime, Debby Kaiser, Sheila Kirkpatrick, Duffy Monahon, Peterborough Heritage

3.5 The cul-de-sac will be placed so that access to all parcels on Craftsman Lane are maintained.

4.0 Project Description – Merrimack Projects – 10136-C

4.1 David McNamara provided a brief overview of the project scope for the Amherst project, including a conceptual layout on an aerial graphic. The scope of the project was generally described as follows:

- Amherst 10136-C (X-A001(264))
 - 101/101A eastbound ramps interchange
 - Signalize the intersection
 - Add second right turn lane exiting the off ramp
 - Examine signal coordination

5.0 Discussion – Amherst Project – 10136-C

5.1 The Committee asked if there were any historic properties in the area, FST replied there were none known, and added that all work was expected to remain within the ROW for this site.

6.0 Conclusion

6.1 Committee concluded indicating that the project created a “No Historic Properties Affected” Determination. The town may prepare a No Historic Properties Affected memo to conclude the process.

Cheshire Railroad, Walpole and Westmoreland

Participants: Brian Lombard and Christine Perron, NHDOT

Brian Lombard provided an update on repairing the damaged stone arch culverts in Westmoreland and Walpole.

The blocks and fill that fell into the Walpole and Westmoreland arch culverts have been removed. Now that the two sites are cleaned up, it has been discovered that sections of sidewalls are undermined. In order to ensure the arch culverts remain intact, a concrete toe wall needs to be installed where the stone blocks are undermined. The toe walls will not extend more than 12” from the existing walls. In Westmoreland, the concrete toe wall will extend the existing stone toe wall on the right hand side facing downstream. In Walpole, the work will occur on the upstream end of the culvert. This work will be done later this summer by Bridge Maintenance. Bridge Maintenance will also be repairing the top of the Walpole arch this summer. Permanent repairs to the Westmoreland arch are still being designed and will be discussed at a future meeting.

Laura Black stated that the toe walls as proposed would be considered a No Adverse Effect. However, this work is being done as part of a larger effort to repair the culverts, and previous repairs resulted in an Adverse Effect. Joyce McKay agreed to simply add the latest repairs to the

existing Adverse Effect memos that have already been signed for both sites. A copy of the request to amend the wetland permits will be sent to DHR for their files.

Franconia, surplus land**Participants: Matt Urban**

Matt Urban quickly presented a 6 acre parcel of land in Franconia that the State is looking to surplus. If you were traveling in the I-93 northbound lane the subject parcel is located easterly of the road at approximately Mile Marker 114.2. Edna Feighner suggested that either an archaeological survey be completed due to the high sensitivity of the surrounding areas prior to the sale of the land, or archaeological covenants be placed on the property.

Barnstead, X-A001(174), 14121E**Participants: Joyce McKay, Jill Edelmann, NHDOT; Laura Black, Edna Feighner, NHDHR.**

The initial review of the project looked at the intersection improvements proposed along Route 28 at the intersections of Peacham and White Oak roads. Highway plans have yet to be developed to determine the exact impacts to the area, however the 2009 archaeological sensitivity survey did call out both Native American and Historic concerns for the area. There is also a former schoolhouse located within the project area that will need an individual inventory form as its property will most likely be impacted. An additional Phase IA/IB will most likely take place once more developed plans have been presented. A staff field review will be conducted to determine if there are additional architectural properties that will require investigation.

Newington Depot**Participants: Peter Michaud, NHDHR**

The State of NH is looking to dispose of a 2.29-acre parcel of land at the end of Bloody Point Road in Newington. On the parcel is the ca. 1873 two-story Newington Depot, which will have preservation covenants placed on the building. Joyce McKay drafted preservation covenants and Peter Michaud reviewed the wording as the DHR and DOT will be carrying out the covenant provisions.

P. Michaud agreed with the document as written, however suggested that documentation of the character defining features accompany the covenant. As the Newington Historic District Commission would likely take charge of this project, it was suggested to meet with them when discussing those character defining features. P. Michaud will email Preservation Brief 17 to the group, which discusses what character defining features are and how to go about defining them. J. McKay and P. Michaud will work with the town to determine a date for field review. J. McKay will then prepare the discussion of character defining features.

It was also suggested that if the State decides to sell the property to the highest bidder, that prospective buyers be required to meet with DHR and DOT staff to fully understand the covenants.



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner



WETLANDS AND NON-SITE SPECIFIC PERMIT 2008-01389

Permittee: NH Dept of Transportation
PO Box 483 Concord, NH 03301

Project Location: Gilboa Road, Westmoreland
Waterbody: unnamed stream

NOTE--
CONDITIONS

Page 1 of 2

APPROVAL DATE: 07/28/2011

EXPIRATION DATE: 08/04/2013

Based upon review of the above referenced application, in accordance with RSA 482-A and RSA 485-A:17, a Wetlands Permit and Non-Site Specific Permit was issued. This permit shall not be considered valid unless signed as specified below.

AMENDMENT

PERMIT DESCRIPTION: Install a concrete invert in a 15 ft. x 165 ft. partially collapsed stone arch culvert and amend permit to include 15 feet of toe wall impacting 2,975 sq. ft. of stream and banks (477 sq. ft. temporary). NHDOT project #66021A.

THIS APPROVAL IS SUBJECT TO THE FOLLOWING PROJECT SPECIFIC CONDITIONS:

1. All work shall be in accordance with plans by NHDOT Bureau of Rail and Transit dated 7-11-08 as received by the Department on October July 21, 2008 and amended per plan dated June 28, 2011 as received on July 1, 2011.
2. Dredged material shall be placed for stabilization or out of the DES Wetlands Bureau jurisdiction.
3. Appropriate siltation/erosion/turbidity controls shall be in place prior to construction, shall be maintained during construction, and shall remain until the area is stabilized.
4. Construction equipment shall minimize the impacts within surface waters as noted in the construction sequence.
5. The tracks or tires of the equipment crossing the stream shall be devoid of soil material prior to the two crossings.
6. Within three days of final grading in an area that is in or adjacent to wetlands or surface waters, all exposed soil areas shall be stabilized by seeding and mulching during the growing season, or if not within the growing season, by mulching with tack or netting and pinning on slopes steeper than 3:1.
7. The contractor responsible for completion of the work shall utilize techniques described in the DES Best Management Practices for Urban Stormwater Runoff Manual (January, 1996) and the Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire (August, 1992).
8. Extreme precautions to be taken within riparian areas to limit unnecessary removal of vegetation during road construction and areas cleared of vegetation to be revegetated as quickly as possible.

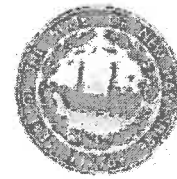
DES Web site: www.des.nh.gov

P.O. Box 95, 29 Hazen Drive, Concord, New Hampshire 03302-0095

Telephone: (603) 271-3503 • Fax: (603) 271-6588 • TDD Access: Relay NH 1-800-735-2964



THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION



GEORGE N. CAMPBELL, JR.
COMMISSIONER

Westmoreland
Cheshire Branch Railroad
Phase I Repairs to Stone Arch
Culvert at Mile Marker 100.5
66017S updated: July 15, 2011

RECEIVED
AUG 17 2011

JEFF BRILLHART, P.E.
ASSISTANT COMMISSIONER
RECEIVED
BUREAU OF ENVIRONMENT

AUG 24 2011

NH DEPARTMENT OF
TRANSPORTATION

Adverse Effect Memo

Pursuant to meetings and discussions on January 7, February 11 and March 11, 2010 and July 14, 2011, and to comply with RSA 227-C: 9, *Directive for Cooperation in the Protection of Historic Resources*, the NH Division of Historical Resources and NH Department of Transportation have coordinated the identification and evaluation of cultural resources associated with Phase I of the project located at Mile Marker 100.5 along the Cheshire Branch Railroad in the Town of Westmoreland. Phase I involves removal of fill from inside the structure and from over the damaged downstream end of the stone culvert. The weakened area of the culvert extends from the downstream opening to an area of collapse 40' upstream within the culvert. The fill will be laid back at a slope of 2:1 to achieve stabilization and avert further sloughing of soil into the structure. Additional fill will be placed in a nearby railroad cut or along the corridor to create access to the base of the culvert. Additionally, a concrete toe wall will be construction along portions of the interior walls to stabilize them. Phase II will complete stabilization of the culvert.

Based on a review pursuant to RSA 227-C: 9 of the architectural and historical significance of the stone culvert, we agree that the Cheshire Branch Railroad is eligible for the National Register of Historic Places under criteria A and C as a district. The stone culvert in Westmoreland is eligible as a contributing resource to this district and also individually eligible. A detailed description of the culvert is on file at the New Hampshire Division of Historical Resources in Concord, New Hampshire. Because the removed fill will be stored on geo-textile along the railroad corridor or in an adjacent railroad cut whose original base is easily distinguishable by a thick bed of cinders, the project will not affect archaeological resources. As necessary, the fill can be removed at a later date. Additionally, the Bureau of Rails will place a concrete toe wall along the right wall facing the upstream end of the culvert. The placement of the toe wall is necessary to prevent the washing of fill from behind this wall. This work is not considered to be an adverse effect.

Under RSA 227-C: 9, we have determined that Phase I of the project will have an overall adverse effect on the eligible culvert because of the removal of the fill associated with the original construction of the structure. This step is necessary to lessen the potential enlargement of the opening and continued collapse of the outlet end; to prevent potential flooding caused by blockage of the culvert with fill and vegetation; and to enable inspection of the culvert to more precisely plan its repair.

We will continue to consult, as appropriate, as this project proceeds.

for *Elizabeth Muzzey* *Acting DSHPO*
Elizabeth Muzzey,
State Historic Preservation Officer

Concurred with by the NH Department of Transportation

Date: *August 24, 2011* By: *Jill Edelmann*
Jillian Edelmann
Cultural Resources Assistant

cc: Chris St. Louis, NHDHR; Christine Perron, NHDOT; Brian Lombard, NHDOT
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RECEIVED
JUL 19 2011

STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

RPA 145 ME

DATE: July 1, 2011

FROM: *CS* Christine Perron
Senior Environmental Manager

AT (OFFICE): Department of
Transportation

SUBJECT: Permit Amendment
Westmoreland, 66021A
DES Permit #2008-01389

Bureau of
Environment

TO: Gino Infascelli, Public Works Permitting Officer
New Hampshire Wetlands Bureau
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

A permit amendment for the subject project is requested. The NHDOT Bureau of Rail & Transit has discovered that a 15' section of the south wall of the stone arch culvert on the Cheshire rail line is undermined. A concrete toe wall is proposed in order to fill the void under the wall and prevent further failure of this historic structure. This work will be done in the same footprint as previously permitted temporary impacts. However, the toe wall will result in 23 sq. ft. of permanent impact to the channel. The proposed toe wall is necessary to prevent further collapse of the arch while permanent stabilization measures are being designed and funding is obtained.

The lead people to contact for this project are Brain Lombard, Railway Operations Engineer, Bureau of Rail & Transit (271-2468 or blombard@dot.state.nh.us), or Christine Perron, Senior Environmental Manager, Bureau of Environment (271-3717 or cperron@dot.state.nh.us).

If and when this request meets with the approval of the Bureau, please send the amended permit directly to Charles Hood, Administrator, Bureau of Environment.

CHH: cjp
Enclosures

cc:
Westmoreland Conservation Commission
Rich Roach, US Army Corps

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RECEIVED
BUREAU OF ENVIRONMENT

JUL 27 2011

NH DEPARTMENT OF
TRANSPORTATION

Conditions required for NEPA & Section 106 of the NHPA have been met.	
<input type="checkbox"/>	No Known Historic Resources
<input type="checkbox"/>	No Resources Present
<input checked="" type="checkbox"/>	No Adverse Effect <i>pertaining only to this toe wall construction.</i>
If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation.	
<i>EJ Maggion</i> 7/19/11	
NH State Historic Preservation Officer	

STATE OF NEW HAMPSHIRE
INTRA-DEPARTMENT COMMUNICATION

FROM *CJP* Christine Perron
Senior Environmental Manager

DATE August 1, 2011
AT (OFFICE) Bureau of Environment

SUBJECT Wetland Bureau Permit # 2008-01389
Westmoreland, 66021A
AMENDED PERMIT

TO Brian Lombard, Bureau of Rail & Transit

Forwarded herewith, for your files and further use as appropriate, are two copies of the subject permit as approved by the Wetlands Bureau and the Water Division on July 28, 2011.

Please return one signed copy to the Bureau of Environment.

Please note specific conditions on permit.

TERRAIN ALTERATION

Note that the non-site specific permit (RSA 485-A: 17 "Terrain Alteration") is part of this Wetlands Bureau Permit.

WATER QUALITY CERTIFICATION

- ☒ This permit covers the project's consideration for Water Quality protection and no further action is required by this office.
- ☐ This permit does not cover the Water Quality protection for this project. However, a Water Quality Permit will be obtained for this project.

CORPS PERMIT STATUS

- ☐ No Corps Jurisdiction
- ☐ SPGP (Minimum Impact) - No waiting period; no Corps approval required
- ☐ SPGP (Minor Impact)- Approval from the Corps has been obtained to proceed with work immediately.
- ☐ SPGP (Major Impact)-Wait 30 days from NHWB issuance date; written approval from Corps required
- ☐ Emergency - No waiting period; No written approval from Corps required
- ☒ Amendment - No waiting period; No written approval from Corps required
- ☐ Corps Individual Permit Required

COASTAL ZONE MANAGEMENT (CZM) STATUS

- ☒ Outside of Coastal Zone-consistency finding not necessary from OSP
- ☐ Within Coastal Zone (Non-Federal Action)-consistency finding not necessary from OSP
- ☐ Within Coastal Zone (Federal Action)-if covered by SPGP, or no Corps' jurisdiction, consistency finding is automatic from OSP
- ☐ Within Coastal Zone (Federal Action)-if individual Corps permit, written consistency finding is necessary from OSP

EROSION CONTROL PLAN STATUS

- ☐ Erosion Control Plan Required; Submit Erosion Control Plan to DES Wetlands Bureau

If you have any questions, please call 271-3717.

CJP:cjp
Encl

9. There shall be no further alteration to wetlands or surface waters without amendment of this permit.

10. Bank repair shall be constructed within seven days of the culvert repair.

11. Work shall be done during low flow.

12. The file shall be notified in writing at least 24 hours prior to the project start date.

13. Photos of the project shall be submitted to the file within 30 days of stabilization.

ADDED

14. The applicant shall continue to work with the NH Fish and Game on the baffle and substrate design.

GENERAL CONDITIONS THAT APPLY TO ALL DES WETLANDS PERMITS:

1. A copy of this permit shall be posted on site during construction in a prominent location visible to inspecting personnel;

2. This permit does not convey a property right, nor authorize any injury to property of others, nor invasion of rights of others;

3. The Wetlands Bureau shall be notified upon completion of work;

4. This permit does not relieve the applicant from the obligation to obtain other local, state or federal permits, and/or consult with other agencies as may be required (including US EPA, US Army Corps of Engineers, NH Department of Transportation, NH Division of Historical Resources (NH Department of Cultural Resources), NHDES-Alteration of Terrain, etc.);

5. Transfer of this permit to a new owner shall require notification to and approval by DES;

6. This permit shall not be extended beyond the current expiration date.

7. This project has been screened for potential impacts to ~~known~~ occurrences of rare species and exemplary natural communities in the immediate area. Since many areas have never been surveyed, or have received only cursory inventories, unidentified sensitive species or communities may be present. This permit does not absolve the permittee from due diligence in regard to state, local or federal laws regarding such communities or species.

8. Review enclosed sheet for status of the US Army Corps of Engineers' federal wetlands permit.

APPROVED: _____

Gino Infascelli

Public Works Supervisor

DES Wetlands Bureau


BY SIGNING BELOW I HEREBY CERTIFY THAT I HAVE FULLY READ THIS PERMIT AND AGREE TO ABIDE BY ALL PERMIT CONDITIONS.

OWNER'S SIGNATURE (required)

CONTRACTOR'S SIGNATURE (required)

**STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION**

DATE: July 1, 2011

FROM:  Christine Perron
Senior Environmental Manager

AT (OFFICE): Department of
Transportation

SUBJECT: Permit Amendment
Westmoreland, 66021A
DES Permit #2008-01389

**Bureau of
Environment**

TO: Gino Infascelli, Public Works Permitting Officer
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If and when this request meets with the approval of the Bureau, please send the amended permit directly to Charles Hood, Administrator, Bureau of Environment.

CHH: cjp
Enclosures

cc:
Westmoreland Conservation Commission
Rich Roach, US Army Corps

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Westmoreland Stone Arch

Scope of Work to Construct Concrete Toe Wall

Now that we have cleaned up the blocks and fill material that fell into the outlet of the Westmoreland Arch, we have found a short 15' section of the south wall that is undermined and in danger of falling into the brook. In order to reduce the likely hood that this section of wall will collapse, we need to construct a short section of concrete toe wall.

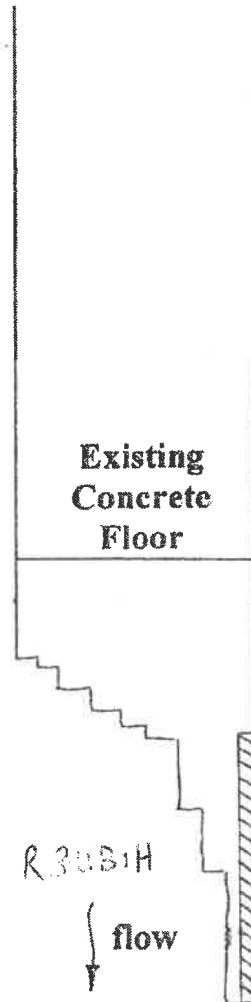
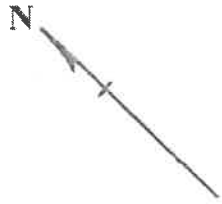
The proposed work will be done in the same area that we have a temporary permit to access and cleanup the material in the brook. We propose to do this work with Bridge Maintenance forces in July as soon as we receive approval. We anticipate that water levels will be low at that time.

Sand bags will be installed in the area where the toe wall will be constructed. A small amount of digging with hand tools will be done under and in front of the gap so that sufficient concrete is placed to ensure that the bottom of the wall is not washed out. Forms will be built in front of the opening and concrete placed. The new section of concrete toe wall will not extend more than 18" from the existing arch wall. A good portion of the toe wall will be covered by the concrete floor slab that will be extended through the area once the outlet header is reconstructed. After the concrete has setup, the forms and sand bags will be removed. All excavation and concrete work will be done behind the sand bag berm.

Plans of the proposed work and photos of the existing conditions are attached.

June 28, 2011

Westmoreland Stone Arch Toe Wall Repairs to Outlet End

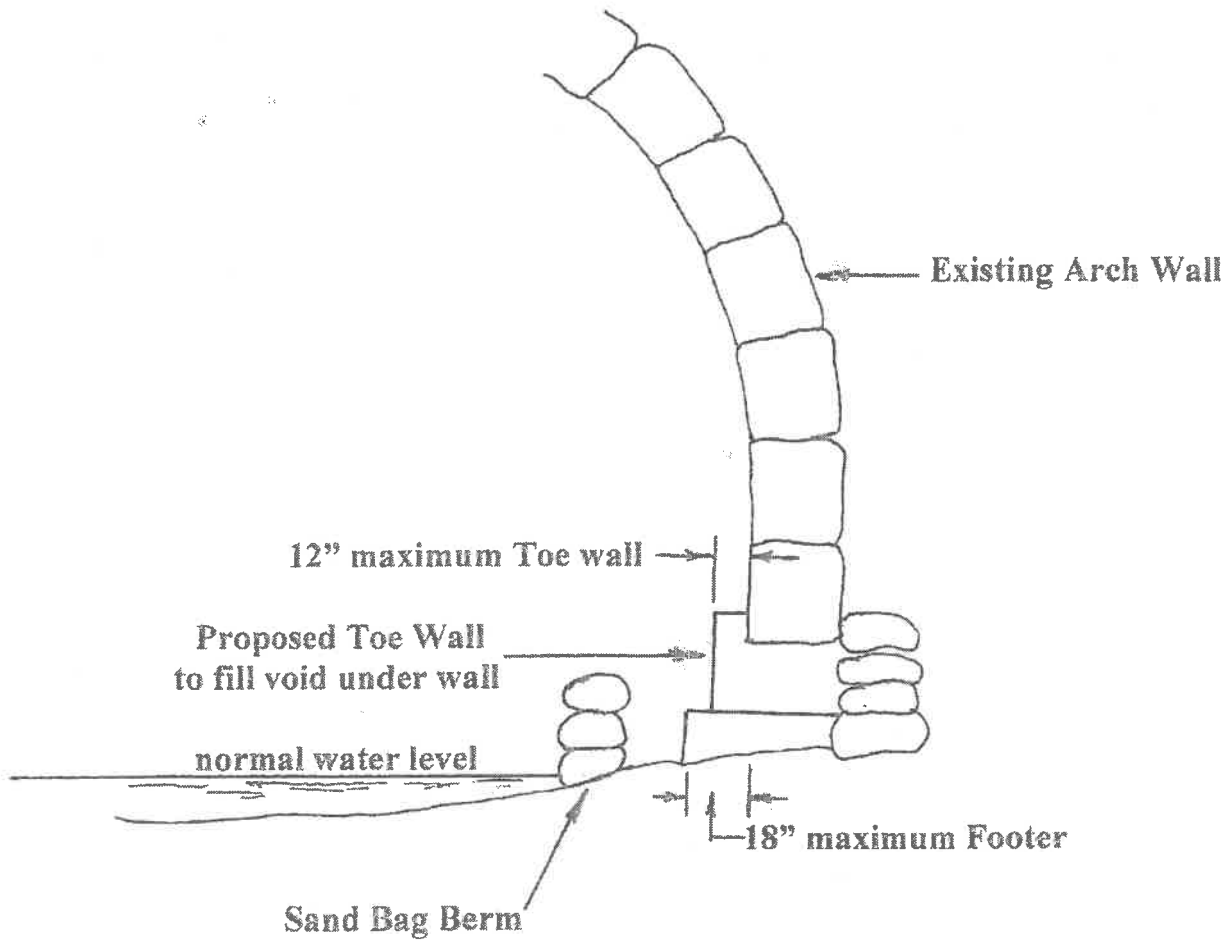


permanent impact
to Channel
23 sq ft

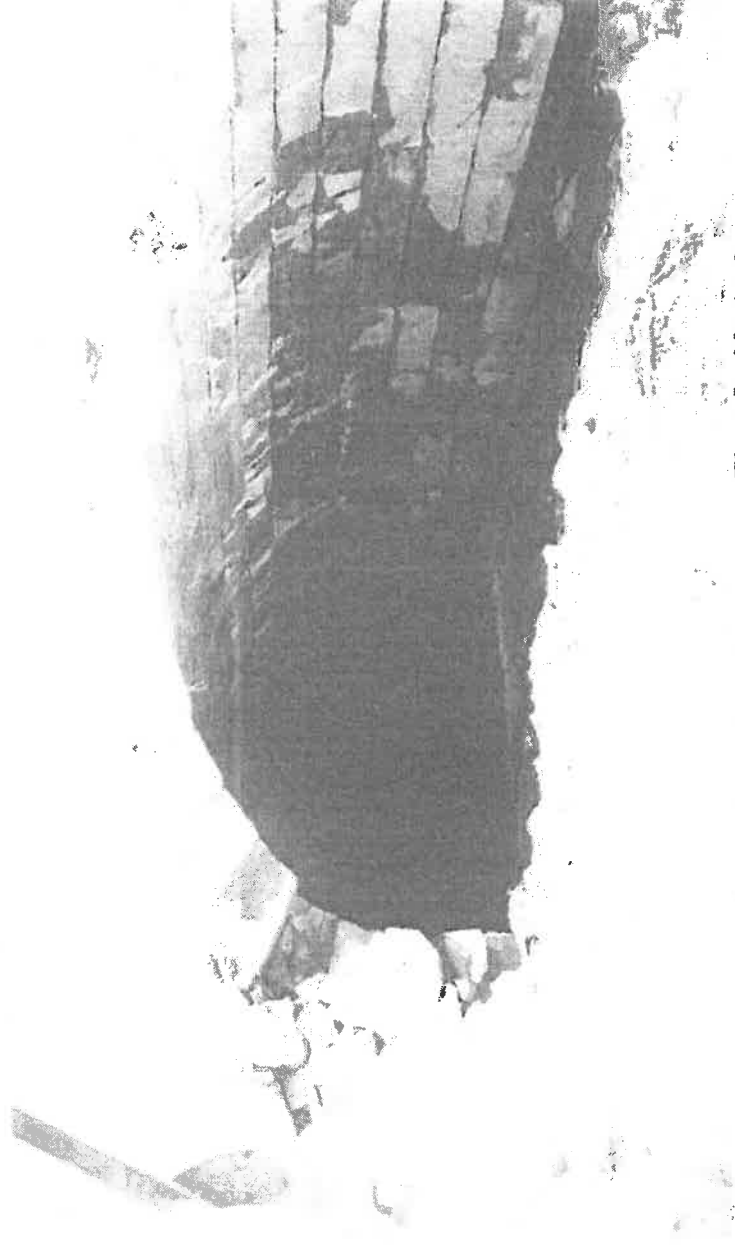
Scale: 1" = 10'

Westmoreland Stone Arch Toe Wall Repairs to Outlet End

TYPICAL SECTION



Not to Scale



View of Arch Outlet Showing Concrete Floor Inside Arch



View of Undermined Arch Section Requiring Concrete Placement



View of Arch Cleared of Fallen Blocks and Debris



View of Excavation Area with Slopes Hydroseeded

**STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION**

FROM: Brian Lombard, PE
Railroad Operations Engineer

AT: NHDOT
Bureau of Rail & Transit

SUBJECT: Westmoreland Arch

DATE: June 3, 2011

TO: Christine Perron

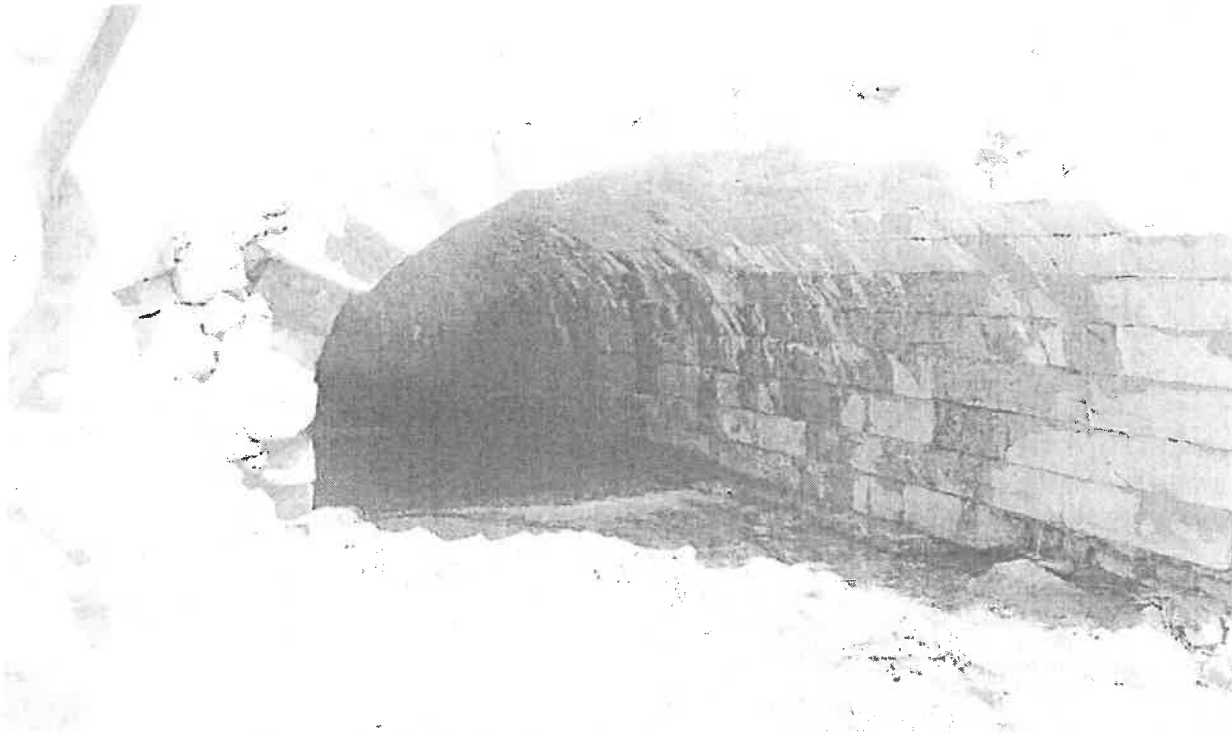
Now that we have cleaned up the blocks and fill material that fell into the outlet of the Westmoreland Arch, we have found one short section of the east wall that is undermined. In order to ensure the arch remains intact and that more blocks and material do not fall into the brook again, we should place concrete in the areas where the blocks are undermined.

Attached are photos of the section that will require concrete. I can get you measurements, sketches and additional photos if you need them. The work will be done within the area that we already have a permit to work in the brook.

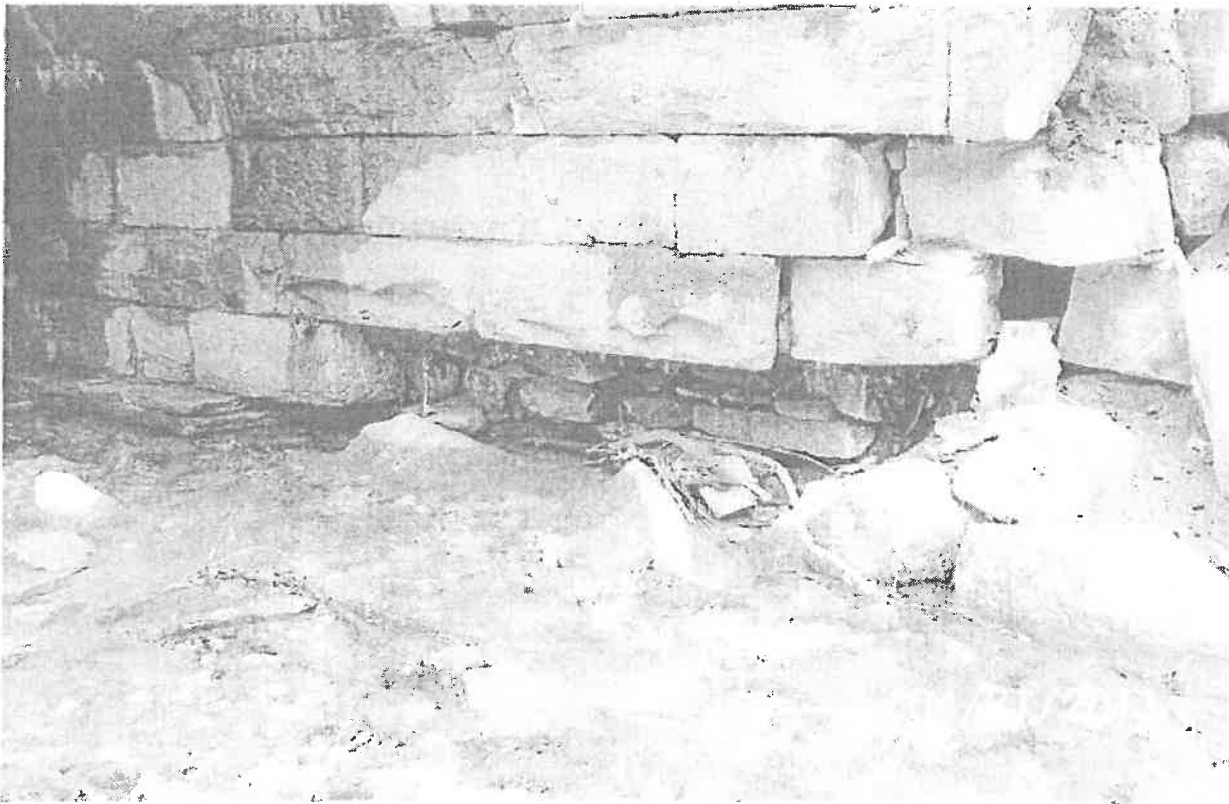
Let me know if it is ok to proceed or if you need more info.

Thanks

Brian



View of Arch Outlet Showing Concrete Floor Inside Arch



View of Undermined Arch Section Requiring Concrete Placement



COPY

RECEIVED
BUREAU OF
APR 11 2011
NH DEPT. OF
TRANSPORTATION

Bureau of Rail & Transit
PO Box 483
Concord, NH 03302-0483
Phone: (603) 271-2468
Fax: (603) 271-6767

STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

To: Gino Infascelli

From: Brian Lombard, PE

Fax: 603-271-6588

Date: 4/8/2011

Phone:

Pages: 6 (including cover sheet)

Re: Info for Emergency Permits – Rail Corridor in Westmoreland

☐ Urgent ☒ For Review ☐ Please Comment ☐ Please Reply ☐ Please Recycle

Gino

Additional blocks and overburden fell into the outlet of the arch in Westmoreland on Wednesday. Several blocks and a large tree root ball fell at the outlet about a year ago and had partially blocked the culvert. The additional material that has fallen in now has blocked about ¾ of the outlet opening.

We are requesting an emergency permit to remove the old tree root ball and the blocks from the brook to eliminate any chance that the outlet could plug up causing a washout of the embankment and flooding downstream. The water backing up behind the blockage is also saturating the ground around the arch and could cause other portions of the arch to become unstable and collapse. It will be necessary to remove the overburden and some of the unstable blocks on the west side of the outlet to prevent further blocks and material from falling into the arch outlet.

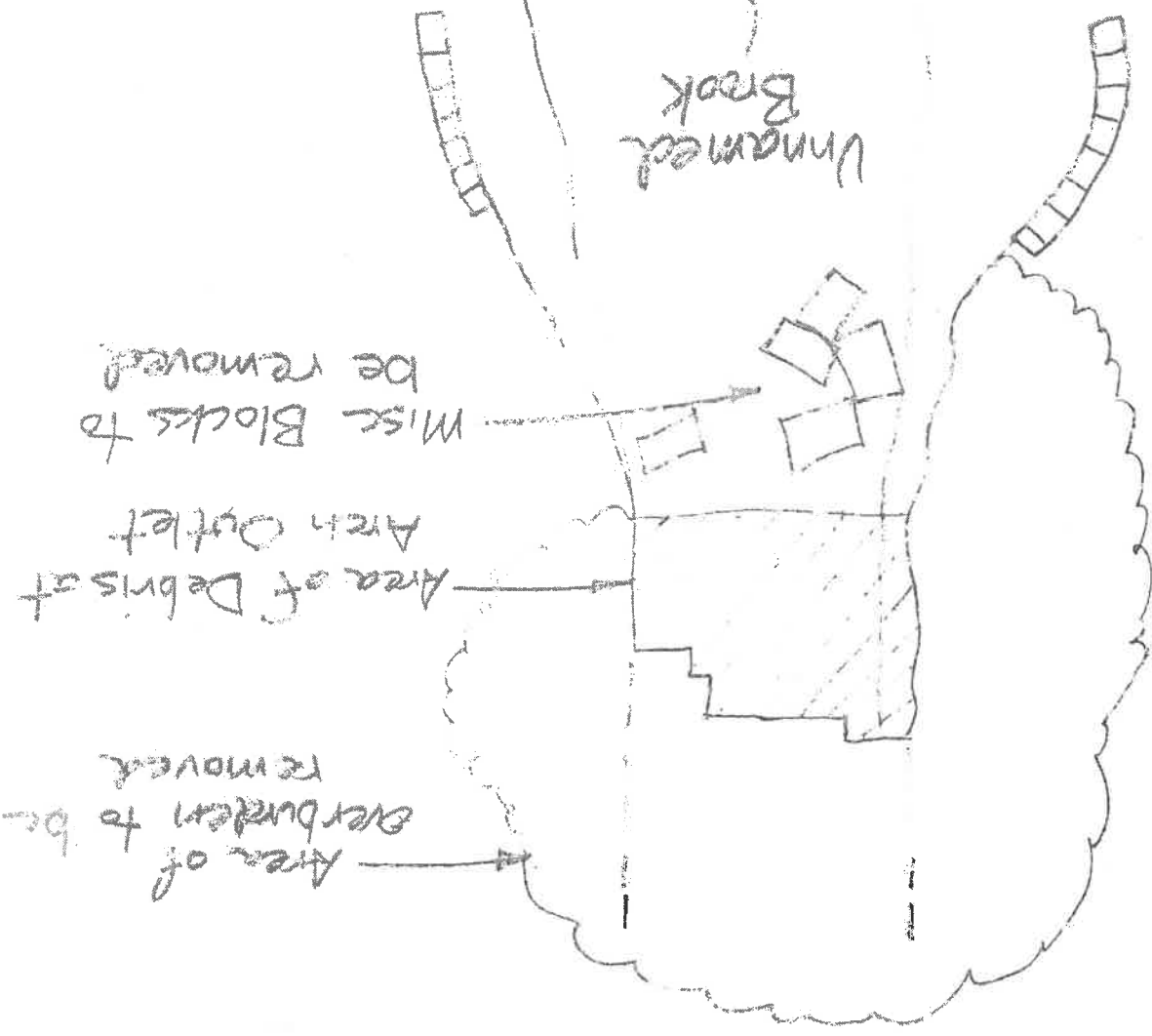
The contractor is on site and can begin work as early as this afternoon. The excavated material will be moved to a location a minimum of 100 ft from the arch area.

Enclosed are the location map, photos and sketch of the work area.

Call with any questions (867-2692).



WESTMORELAND ARCH CLEANOUT DEBRIS IN OUTLET



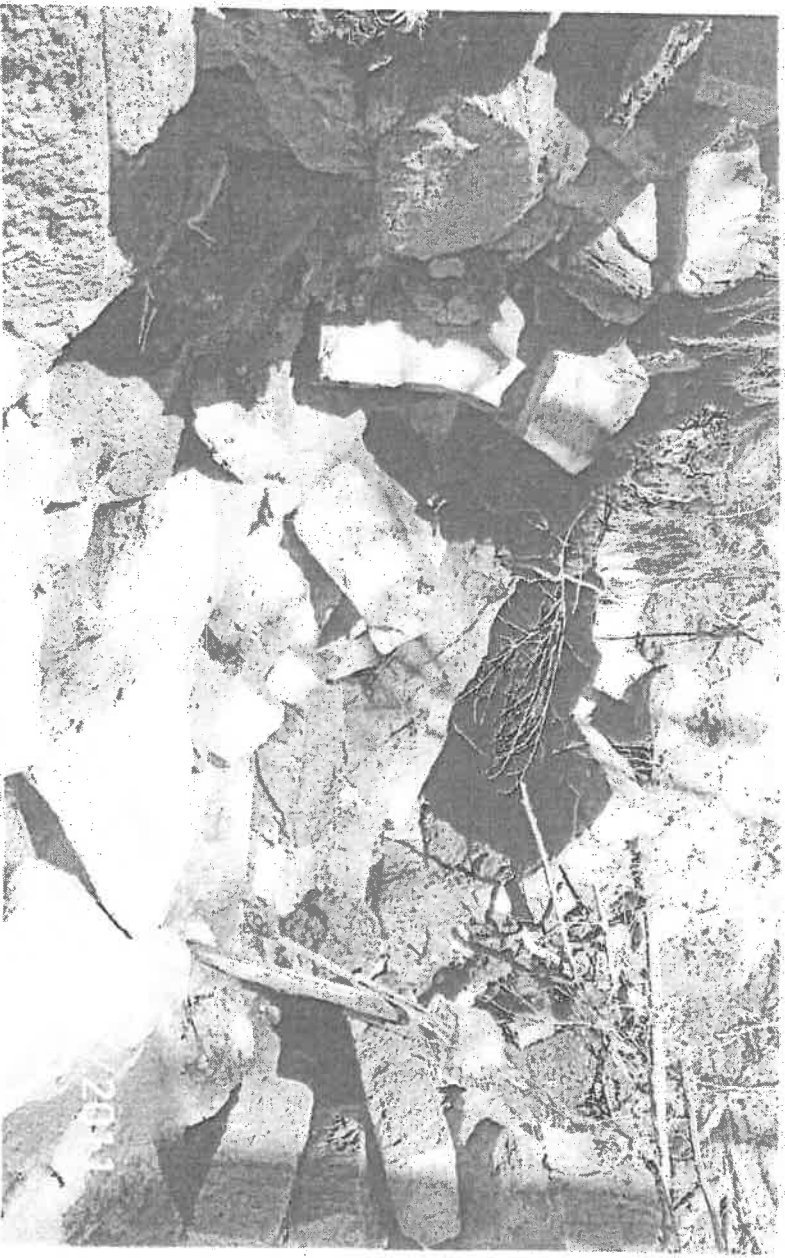
Approximate
Scale 1" = 10'
Braun Lombardi
4-8-2011
Old Block Wing



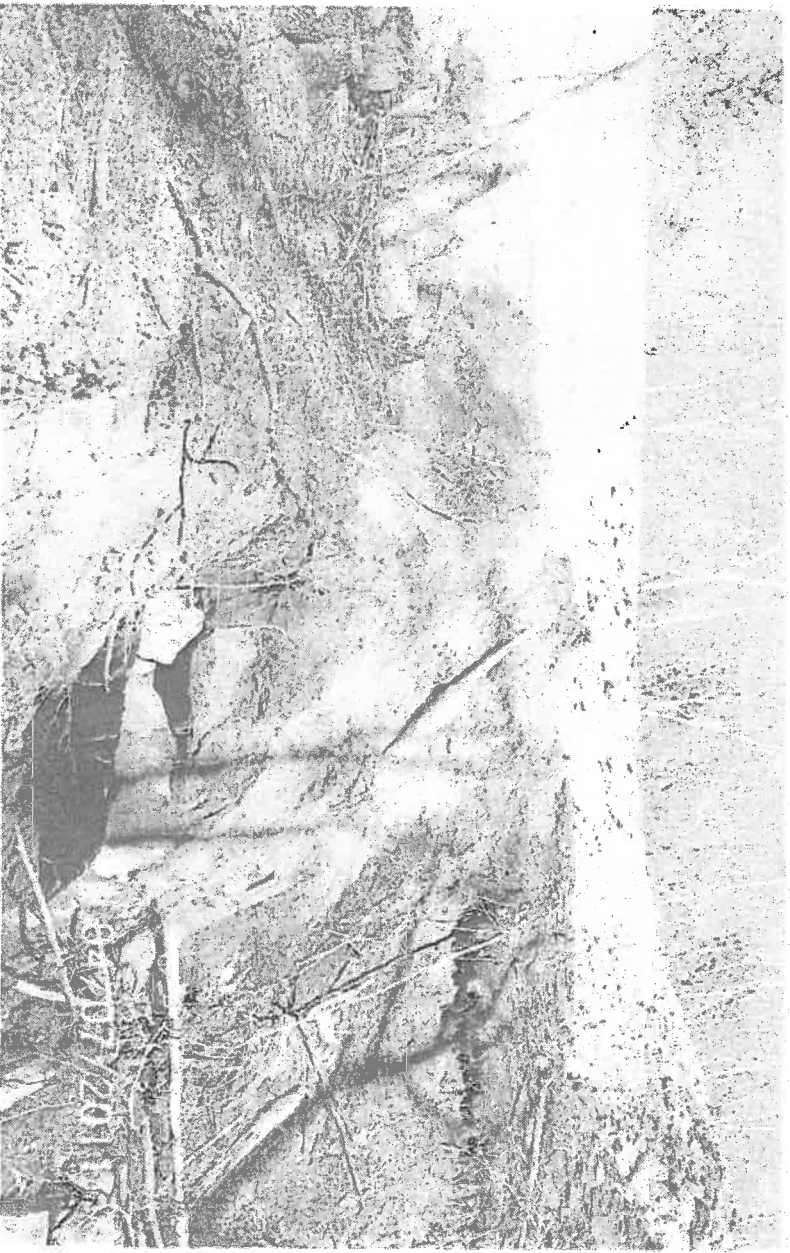
View of Ground Around Arch Outlet Looking From The West



View of Ground and Arch Outlet



View of Arch Blocked by Fallen Blocks and Debris



View of Unstable Ground Over and Around Arch Outlet



View of Soil Cracks on West Side of Arch Outlet



View of Unstable Blocks and Ledge at Outlet of Arch (West Side)

Westmoreland 66021A-2

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENVIRONMENT
PO BOX 483
CONCORD, NH 03301



DATE: August 25, 2008

TO: John Magee
NH Fish & Game

PHONE: 271-2744
FAX: 271-1438

FROM: Christine Perron
NHDOT- Bureau of Environment

PHONE: 271-3717
FAX: 271-7199

NUMBER OF PAGES INCLUDING COVER SHEET: 2

MESSAGE

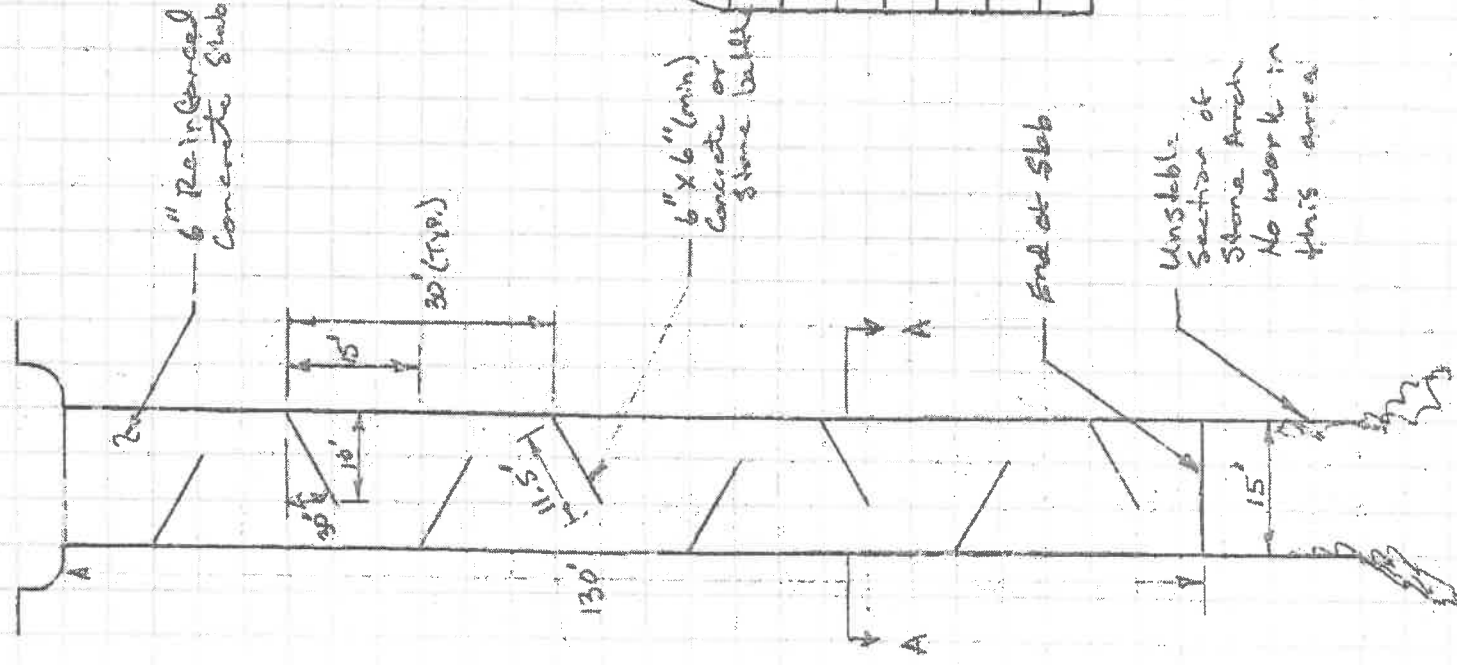
Sketch showing proposed baffles is attached.

Let me know if you need anything else.

Christine

Wastmore land 66021 A
 Wetlands Permit #2008-01389
 Fish Battle Design

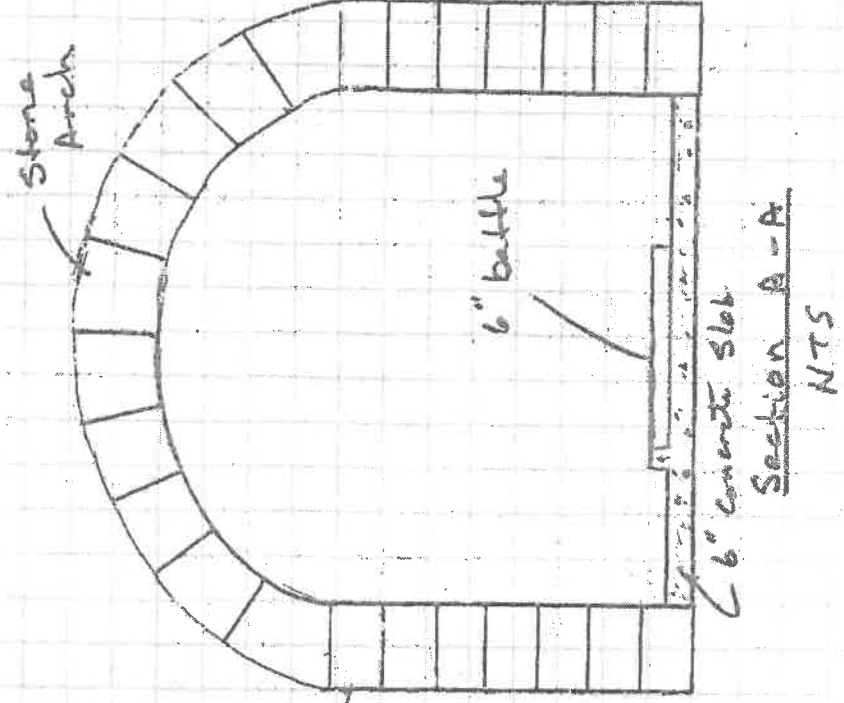
B/22/08 DHC



Scale: 1" = 20'

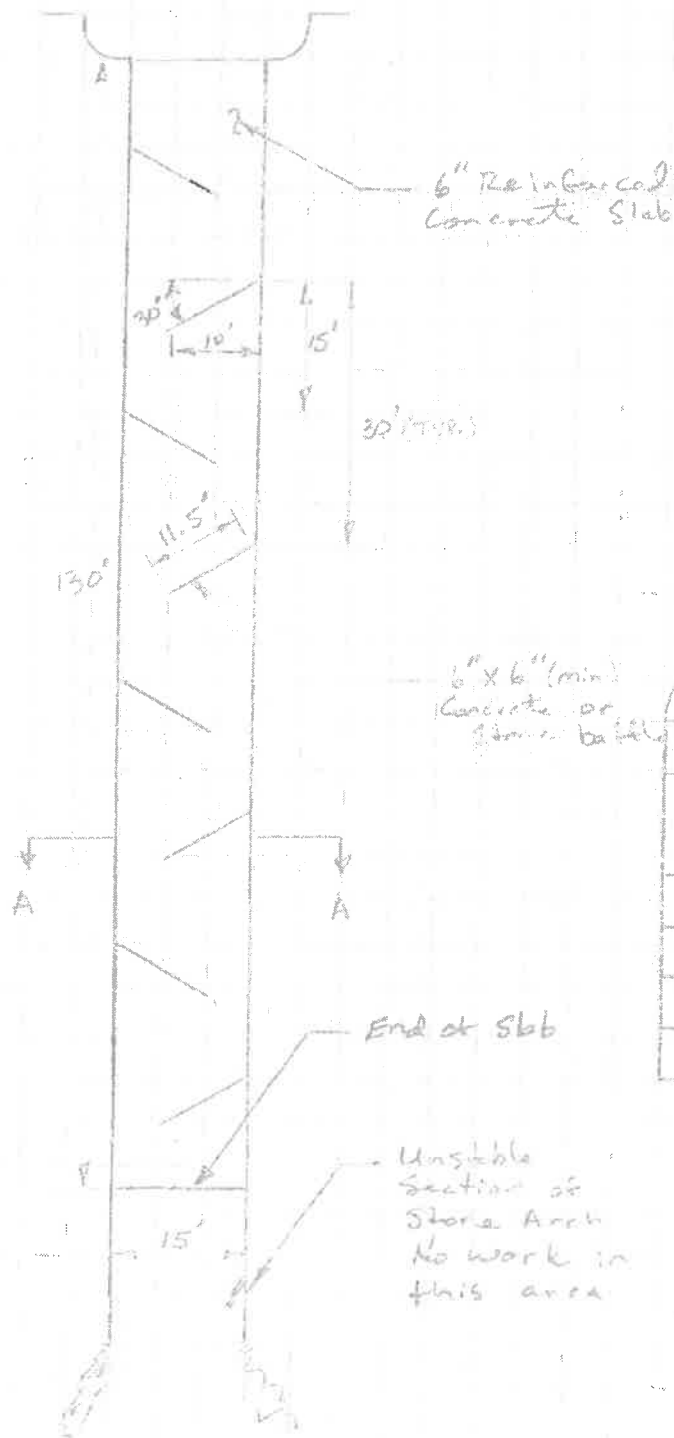
Note!

- 1) Bottles to be 6" wide and 6" high minimum and to be made of local stones if available otherwise to be made of concrete.



Westmoreland 66021A
 Wetland As. Permit #2005-01357
 Fish Habitat Design

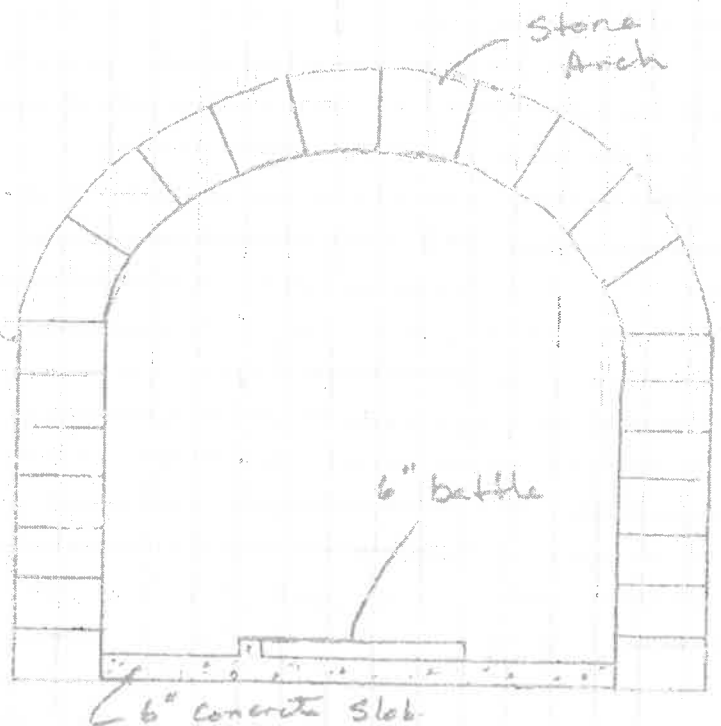
8/22/05 DRL



Scale: 1" = 20'

Note:

- 1.) Baffles to be 6" wide and 6" high minimum and to be made of local stones if available otherwise to be made of concrete.



Section A-A
 NTS

STATE OF NEW HAMPSHIRE
INTRA-DEPARTMENT COMMUNICATION

FROM CJP Christine Perron
Senior Environmental Manager

DATE August 14, 2008
AT (OFFICE) Bureau of Environment

SUBJECT Wetland Bureau Permit # 2008-01389
Westmoreland, 66021A

TO Doug Gosling, Bureau of Bridge Maintenance
Brian Lombard, Bureau of Rail & Transit

Forwarded herewith, for your files and further use as appropriate, are two copies of the subject permit as approved by the Wetlands Bureau and the Water Division on August 4, 2008.

Please note specific conditions on permit.

TERRAIN ALTERATION

Note that the non-site specific permit (RSA 485-A: 17 "Terrain Alteration") is part of this Wetlands Bureau Permit.

WATER QUALITY CERTIFICATION

- ☒ This permit covers the project's consideration for Water Quality protection and no further action is required by this office.
- ☐ This permit does not cover the Water Quality protection for this project. However, a Water Quality Permit will be obtained for this project.

CORPS PERMIT STATUS

- ☐ No Corps Jurisdiction
- ☐ SPGP (Minimum Impact) - No waiting period; no Corps approval required
- ☒ SPGP (Minor Impact)- Approval from the Corps has been obtained to proceed with work immediately.
- ☐ SPGP (Major Impact)-Wait 30 days from NHWB issuance date; written approval from Corps required
- ☐ Emergency - No waiting period; No written approval from Corps required
- ☐ Amendment - No waiting period; No written approval from Corps required
- ☐ Corps Individual Permit Required

COASTAL ZONE MANAGEMENT (CZM) STATUS

- ☒ Outside of Coastal Zone-consistency finding not necessary from OSP
- ☐ Within Coastal Zone (Non-Federal Action)-consistency finding not necessary from OSP
- ☐ Within Coastal Zone (Federal Action)-if covered by SPGP, or no Corps' jurisdiction, consistency finding is automatic from OSP
- ☐ Within Coastal Zone (Federal Action)-if individual Corps permit, written consistency finding is necessary from OSP

EROSION CONTROL PLAN STATUS

- ☐ Erosion Control Plan Required; Submit Erosion Control Plan to DES Wetlands Bureau

If you have any questions, please call 271-3717.

CJP:cjp
Encl



THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION



GEORGE N. CAMPBELL, JR.
COMMISSIONER

Westmoreland
Cheshire Branch Railroad
Phase I Repairs to Stone Arch
Culvert at Mile Marker 100.5
66017S updated: July 15, 2011

RECEIVED
AUG 17 2011

JEFF BRILLHART, P.E.
ASSISTANT COMMISSIONER
RECEIVED
BUREAU OF ENVIRONMENT

AUG 24 2011

NH DEPARTMENT OF
TRANSPORTATION


Adverse Effect Memo

Pursuant to meetings and discussions on January 7, February 11 and March 11, 2010 and July 14, 2011, and to comply with RSA 227-C: 9, *Directive for Cooperation in the Protection of Historic Resources*, the NH Division of Historical Resources and NH Department of Transportation have coordinated the identification and evaluation of cultural resources associated with Phase I of the project located at Mile Marker 100.5 along the Cheshire Branch Railroad in the Town of Westmoreland. Phase I involves removal of fill from inside the structure and from over the damaged downstream end of the stone culvert. The weakened area of the culvert extends from the downstream opening to an area of collapse 40' upstream within the culvert. The fill will be laid back at a slope of 2:1 to achieve stabilization and avert further sloughing of soil into the structure. Additional fill will be placed in a nearby railroad cut or along the corridor to create access to the base of the culvert. Additionally, a concrete toe wall will be construction along portions of the interior walls to stabilize them. Phase II will complete stabilization of the culvert.

Based on a review pursuant to RSA 227-C: 9 of the architectural and historical significance of the stone culvert, we agree that the Cheshire Branch Railroad is eligible for the National Register of Historic Places under criteria A and C as a district. The stone culvert in Westmoreland is eligible as a contributing resource to this district and also individually eligible. A detailed description of the culvert is on file at the New Hampshire Division of Historical Resources in Concord, New Hampshire. Because the removed fill will be stored on geo-textile along the railroad corridor or in an adjacent railroad cut whose original base is easily distinguishable by a thick bed of cinders, the project will not affect archaeological resources. As necessary, the fill can be removed at a later date. Additionally, the Bureau of Rails will place a concrete toe wall along the right wall facing the upstream end of the culvert. The placement of the toe wall is necessary to prevent the washing of fill from behind this wall. This work is not considered to be an adverse effect.

Under RSA 227-C: 9, we have determined that Phase I of the project will have an overall adverse effect on the eligible culvert because of the removal of the fill associated with the original construction of the structure. This step is necessary to lessen the potential enlargement of the opening and continued collapse of the outlet end; to prevent potential flooding caused by blockage of the culvert with fill and vegetation; and to enable inspection of the culvert to more precisely plan its repair.

We will continue to consult, as appropriate, as this project proceeds.


Elizabeth Muzzey,
State Historic Preservation Officer

Concurred with by the NH Department of Transportation

Date: August 24, 2011 By: Jill Edelmann
Jillian Edelmann
Cultural Resources Assistant

cc: Chris St. Louis, NHDHR; Christine Perron, NHDOT; Brian Lombard, NHDOT
S:\PROJECTS\Rail & Transit\Cheshire Branch Stone Arch Culverts\Westmoreland\memorev8-15-11.doc



DEPARTMENT OF ENVIRONMENTAL SERVICES

WETLANDS BUREAU
PO BOX 95, 29 HAZEN DRIVE
CONCORD, NH 03302-0095
(603) 271-2147



EMERGENCY AUTHORIZATION VERIFICATION

OWNER (name/address/phone)

NHDOT
PO Box 483
Concord NH 03301
271-3226

AGENT/CONTRACTOR(name/address/phone)

Brian Lombard
NHDOT Bureau of Rail & Transit
FAX 271-6767

LOCATION RR arch culvert off Gilboa Road

TOWN

Westmoreland

WATERBODY White Bridge Brook

This is to confirm that I have given emergency authorization in accordance with Wt 500 to the owner/agent to conduct the following work in DES Wetlands Bureau jurisdiction:

Remove the ledge, granite blocks and gravel material from the downstream brook channel (approximately 300 linear feet) and place rip rap on the side slopes to stabilize them until the remainder of work to include the final header construction and slope stabilization work to be performed immediately following construction of this project.

This authorization is subject to the following conditions

1. The owner shall file a follow-up application before Sept. 1, 2013 .
2. The municipal Conservation Commission and Board of Selectmen shall be notified prior to the start of work.
3. This form shall be properly posted at the work site.
4. Work is limited to temporary stabilization of the site or mitigation of the immediate threat.
Within 30 days of completion of the work, the Applicant/Owner shall file a report with DES describing the work performed under this authorization including pre-construction and post-construction photos.
5. The Applicant/Owner shall be responsible for assuring that the work is performed in a manner that will not result in damages to other properties either during or after completion of the work.
6. This authorization does not convey a property right, nor authorize any injury to property of others, nor invasion of rights of others.
7. Appropriate siltation, erosion controls, turbidity, and sedimentation controls shall be utilized to limit turbidity and sedimentation to surface waters and wetlands.
8. Extreme precautions shall be taken to prevent unnecessary removal of vegetation.
9. Construction equipment shall be inspected daily for leaking fuel, oil, and hydraulic fluid. Faulty equipment shall be repaired prior to continuing work.
10. Within three days of completion all exposed soil areas shall be stabilized by seeding, mulching, and netting as necessary to prevent erosion of soils

Page 2 of 2

NHDOT Bureau of Rail & Transit

LOCATION RR arch culvert off Gilboa Road

TOWN

Westmoreland

Conditions continued:

11. The contractor responsible for the work shall utilize techniques described in the New Hampshire Stormwater Manual, Volume 3, Erosion and Sediment Controls During Construction (December 2008) found at <http://des.nh.gov/organization/divisions/water/stormwater/manual.htm>

* THIS AUTHORIZATION EXPIRES Sept. 1, 2013. ALL work must be completed by this date.

This authorization has been given file number 2013-01945. Please use that number in all future correspondence.

This form is valid only if signed below by the DES Wetlands Bureau Administrator or his designee.

Signed



Date July 19, 2013

Gino Infascelli Public Works Supervisor
DES Wetlands Bureau

Cc ☒ Conservation Commission
☒ DES Rivers Coordinator



DEPARTMENT OF ENVIRONMENTAL SERVICES

WETLANDS BUREAU
PO BOX 95, 29 HAZEN DRIVE
CONCORD, NH 03302-0095
(603) 271-2147



EMERGENCY AUTHORIZATION VERIFICATION

OWNER (name/address/phone)

NHDOT
PO Box 483
Concord NH 03301
271-3226

AGENT/CONTRACTOR(name/address/phone)

Brian Lombard
NHDOT Bureau of Rail & Transit
FAX 271-6767

LOCATION RR arch culvert off Gilboa Road

TOWN

Westmoreland

WATERBODY White Bridge Brook

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AMEND EXPIRATION DATE:

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This authorization is subject to the following conditions

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3. This form shall be properly posted at the work site.
4. Work is limited to temporary stabilization of the site or mitigation of the immediate threat.
Within 30 days of completion of the work, the Applicant/Owner shall file a report with DES describing the work performed under this authorization including pre-construction and post-construction photos.
5. The Applicant/Owner shall be responsible for assuring that the work is performed in a manner that will not result in damages to other properties either during or after completion of the work.
6. This authorization does not convey a property right, nor authorize any injury to property of others, nor invasion of rights of others.
7. Appropriate siltation, erosion controls, turbidity, and sedimentation controls shall be utilized to limit turbidity and sedimentation to surface waters and wetlands.
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Page 2 of 2

NHDOT Bureau of Rail & Transit

LOCATION RR arch culvert off Gilboa Road

TOWN

Westmoreland

Conditions continued:

11. The contractor responsible for the work shall utilize techniques described in the New Hampshire Stormwater Manual, Volume 3, Erosion and Sediment Controls During Construction (December 2008) found at <http://des.nh.gov/organization/divisions/water/stormwater/manual.htm>

* THIS AUTHORIZATION EXPIRES OCT. 1, 2013. ALL work must be completed by this date.

This authorization has been given file number 2013-01945. Please use that number in all future correspondence.

This form is valid only if signed below by the DES Wetlands Bureau Administrator or his designee.

Signed



Date August 13, 2013

Gino Infascelli Public Works Supervisor
DES Wetlands Bureau

Cc ☒ Conservation Commission
☒ DES Rivers Coordinator

BUREAU OF ENVIRONMENT CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting

DATE OF CONFERENCE: April 18, 2018

LOCATION OF CONFERENCE: John O. Morton Building

ATTENDED BY:

NHDOT

Matt Urban
Sarah Large
Marc Laurin
Keith Cota
Mark Hemmerlein
Chris Carucci
Meli Dube
Bob Landry
Don Lyford
Bill Saffian
Trent Zanes
Brian Lombard
Maggie Baldwin
Kevin Nyhan
Bob Juliano
Steve Johnson
Shelly Winters

ACOE

Mike Hicks

Federal Highway

Jamie Sikora

EPA

Mark Kern

US Coast Guard – Bridges

Jim Rousseau

NHDES

Gino Infascelli
Lori Sommer
Tim Drew
Chris Williams

NHF&G

Carol Henderson

NH Natural Heritage

Bureau

Amy Lamb

**NH Office of Energy and
Planning**

Jennifer Gilbert
Samara Ebinger

**NH Department of Business
& Economic Affairs**

Jimmie Hinson

Consultants/Public

Participants

Chris Bean
Leo Tidd
Vicki Chase
Pete Walker
Christine Perron
Jim Fougere
Janusz Czyzowski
Colin Lentz

(When viewing these minutes online, click on an attendee to send an e-mail)

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH: *(minutes on subsequent pages)*

Finalization of March 21 st 2018 Natural Resource Agency Meeting Minutes	2
Derry- Londonderry, #13065 (IM-0931(201))	2
Newington-Dover, #11238S (NHS-027-1(037)).....	5
Alexandria, #15937 (X-A1(047)).....	7
Concord-Pembroke, #41267 (X-A004(575))	8
Portsmouth-Kittery, #15731 (A000(909)).....	10
Hinsdale-Brattleboro, #12210C (A004(152))	11
Haverhill-Benton, #41297 (X-A004(587)).....	13
Westmoreland, #41624 (Non-Federal).....	14

(When viewing these minutes online, click on a project to zoom to the minutes for that project)

He would double check on the Shoreland issue. Otherwise, the wetland field work will be conducted as the weather cooperates but the bridges are fairly straight forward so no unusual issues are expected.

No other comments.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meetings.

Westmoreland, #41624 (Non-Federal)

Meli Dube, NHDOT Bureau of Environment, introduced the project. This work is part of an on-going effort to stabilize the outlet of a historic stone-arch culvert carrying the Cheshire Branch Rail Road Rail Trail over White Bridge Brook in the Town of Westmoreland. This area has seen significant damage due to flooding during large storm events including erosion and gradual collapse of the culvert over the course of several years. This project is subject to tight deadlines and budgetary restraints, as it is financed completely through Capital Funds with no federal contribution. The US Army Corps of Engineers will be the lead federal agency.

Brian Lombard, NHDOT Bureau of Rail and Transit, provided a detailed history of the damage, work and permitting that has occurred at the site. NHDES Permit 2003-02440 was issued in 2003 to clean up debris from a portion of the arch that collapsed earlier that year during a large storm event, FEMA Disaster #1489. Due to continued erosion and stone arch collapse, NHDES issued Permit 2008-01389 in 2008 to allow installation of a concrete pad floor inside the culvert to prevent undermining of the sidewalls. Continued collapse required the Rail Road embankment to be pushed back off of the end of the culvert in 2010. NHDES Permit 2008-01389 was amended in 2011 to allow installation of concrete toe walls under a side wall at the outlet of the arch. A series of heavy storms in 2013 resulted in additional collapse and washouts, emergency work to clear the stream and stabilize the area was performed under FEMA Project 24761 and NHDES Permit 2013-01945. Work at this project site was previously reviewed at the April 21, 2010 Natural Resource Agency Meeting.

B. Lombard indicated that the Rail and Transit will be partnering with the Bureau of Bridge Maintenance again to accomplish the work in order to meet budgetary restraints. Bridge Maintenance has assessed the current condition and developed a proposed plan. Remnants of the old stone wingwalls which mark the original end of the culvert are still in place approximately 45 feet downstream from the existing outlet. During flood events, water is trapped and creates a backwater which continuously erodes the base of the stone arch culvert and undermines the existing concrete slab that was installed in the culvert in 2008. The downstream channel also experiences significant erosion during flooding events and carrying streambed material several hundred feet downstream. Bridge Maintenance has proposed installing a headwall around the existing outlet, a 2' thick x 15' wide x 45' long concrete slab extending from the existing slab to the wingwalls downstream with 16" thick x 8' high x 45' long concrete walls on either side connecting to and supporting both the remaining stone arch and the wingwall remnants. The work will also pour an additional 8" thick x 33' wide x 14' long concrete slab apron to fill the area

between the wingwall remnants to ensure that the stone base is preserved from additional erosion. Finally, fabric and riprap will be installed around the headwall and along the new walls to prevent erosion during overtopping flood events. The intent of this approach is to preserve the remaining stone arch, the remaining wingwall remnants and prevent continued erosion of the stream. B. Lombard detailed the anticipated wetland impacts based on the proposed slab and wall installations. Anticipated permanent impacts to the channel total 1,137, permanent impacts to the bank total 656 square feet and temporary impacts to the bank total 820 square feet. There is currently riprap extending 41' long x 20' wide on both sides of the stream, which will be reduced to a 41' x 10' wide strip which will reduce the area of riprap by 820 square feet.

Carol Henderson, NH Fish and Game, observed that it appears no tree clearing will be necessary based on the photos shown by B. Lombard. M. Dube confirmed that all tree around the work area have been previously cleared. Mike Hicks, US Army Corps of Engineers, stated that this work would likely have "No Effect" on northern long-eared bats and the 4(d) rule would be appropriate. M. Hicks also asked about coordination regarding Section 106 of the National Historic Preservation Act. M. Dube explained that the previous work which occurred in 2011 under the amended 2008-01389 NHDES Wetlands Bureau permit was determined to have an adverse effect on the historic stone arch and that the work in 2011 was considered to be Phase 1, this effort is considered to be a continuation of that adverse effect finding under Phase 2. Mitigation for the adverse effect finding was completed through a series of inspections and inventories of all the stone arch culverts in the surrounding area. M. Dube confirmed that continued coordination with the State Historic Preservation Officer is scheduled and will be completed appropriately. C. Henderson inquired about the depth of the existing slab and the need for the depth of the proposed slab. Steve Johnson, NHDOT Bridge Maintenance, stated that the existing slab is between 8"-1' thick to cover the streambed and prevent undermining. The existing slab does have baffles to assist with fish passage. The proposed slab would be 2' thick and tie in to the elevation of the current slab, baffles could be installed on the proposed slab as well. S. Johnson noted that it would not be necessary to excavate down the entire 2' throughout the stream channel in order to install this slab due to erosion of the streambed. S. Johnson also stated that this depth of slab is necessary to install the sidewalls with minimal excavation and disturbance. Gino Infascelli, NHDES Wetlands Bureau, noted that he has been to the site several times and has seen fish using the stream on the outlet side. B. Lombard noted that the crossing does not convey any notable depth during low flow conditions.

M. Hicks asked if the culvert is considered undersized given the history of flooding. B. Lombard responded that it likely is just for the large storm events, but that replacement and installation of a full span stream-crossing compliant structure is outside the available funding and would result in a loss of the historic resource. B. Lombard provided a brief explanation of some alternatives considered, including reconstruction of the stone arch culvert, replacement and resizing, and all were considered to be infeasible. G. Infascelli noted that the proposed design, while preserving the historic elements, presents a significant loss of stream channel. S. Johnson explained that even if the full slab is not installed, the existing slab would need to be reinforced and armored and the collapsing stone arch stabilized in some way. M. Dube noted that the stream channel is currently heavily disturbed due to the continued erosion and placement of stone.

Matt Urban, NHDOT Bureau of Environment, suggested that mitigation be calculated for linear feet of impacts to the stream channel from the concrete pad and not to the banks as the walls are going in the same place as the existing riprap so the banks have already been highly disturbed. G. Infascelli stated that Lori Sommer, NHDES Wetlands Bureau, would need to be consulted to confirm this approach.

This project has been previously discussed at the April 21, 2010 Monthly Natural Resource Agency Coordination Meeting.

BUREAU OF ENVIRONMENT CONFERENCE REPORT

SUBJECT: Monthly SHPO-FHWA-ACOE-NHDOT Cultural Resources Meeting

DATE OF CONFERENCES: May 10, 2018

LOCATION OF CONFERENCE: John O. Morton Building

ATTENDED BY:

NHDOT

Joe Adams
Phil Brogan
Sheila Charles
Ron Crickard
Meli Dube
Jill Edelmann
Tom Jameson
Joshua Lafond
Marc Laurin
Brian Lombard
Rebecca Martin
Stephanie Micucci

NHDHR

Laura Black
David Trubey

FHWA

Jamie Sikora

Bethlehem Heritage

Clare Brown
Sandy Leleme

GPI

John Watters

H & H

Kim Smith

MJ

Christine Perron

Normandeau

Vicki Chase

VHB

Greg Bakos
Nicole Benjamin-Ma

**Town of Manchester
DPW**

Bruce Thomas

PROJECTS/PRESENTATIONS REVIEWED THIS MONTH:

(minutes on subsequent pages)

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Westmoreland 41624 (non-federal project)

Participants: Meli Dube, Brian Lombard, NHDOT

Continued consultation to discuss Phase 2 of the stabilization efforts at the historic stone arch culvert carrying White Bridge Brook under the Cheshire Branch Rail Road and to establish the next steps for Section 106 compliance. Phase 1 of this project (NHDOT #66017S, RPR#145) was determined to have an Adverse Effect in 2011, and a survey of all similar stone arch culverts in the area was completed for mitigation in 2012. The proposed work in Phase 2 will install a concrete pad and walls extending from the existing end of the arch to the remaining wing wall remnants with the intent of preserving the historic features and preventing further erosion of the stream during flood events. This project was previously discussed at Cultural Resource Agency Meetings on January 7, 2010, February 11, 2010 and March 11, 2010.

Meli Dube, NHDOT Bureau of Environment, introduced the project. The proposed work will stabilize the stone arch culvert carrying White Bridge Brook under the Cheshire RR corridor in

Westmoreland north of NH Route 12. M. Dube explained that this location has been discussed and worked on several times since 2003 when a large portion of the stone arch collapsed, including wetland permitting and Section 106 coordination. An "Adverse Effect" determination was made in 2011 for the impacts to the stone arch associated with removing debris from the brook and stabilizing the banks, which was identified as Phase 1 of the necessary work with an understanding that Phase 2 would be planned and executed in the future. The current proposal is intended to complete Phase 2 of the work.

Brian Lombard, NHDOT Bureau of Rail and Transit, provided a history of the deterioration and corresponding repair work that has occurred since the original 2003 collapse, including:

- 2003: large storm event caused collapse of 20 ft section of arch outlet and washout, permit was issued to remove debris from stream and stabilize banks
- 2007: additional collapse, debris cleaned out under 2003 permit
- 2008: concrete invert installed to prevent continued collapse of stone side support walls
- 2009: debris and tree roots from above outlet continue to fall in to stream and destabilize stone arch
- 2010: Cultural Resource Agency Meetings in January, February and March. A two phase approach is agreed upon, Phase 1 will remove trees and pull slope above outlet back to prevent further erosion. Phase 2 to come later. Phase 1 construction efforts begin
- 2011: Continued collapse, clean up authorized under revised 2008 wetlands permit. Phase 1 construction efforts are completed. Proposed toe wall repair is not completed due to danger associated with entering collapsing culvert. An Adverse Effect Memo is issued for the work up to this point, including the alteration of the slope.
- 2012: Inspections of all stone arch culverts (7 culverts and 2 bridges) on the Cheshire Branch Rail Road are completed by B. Lombard and Amy Lamb, formally of NHDOT Bureau of Environment, as mitigation for the Adverse Effect finding for Phase 1, efforts not completed due to lack of funding.
- 2013: Heavy storms cause more collapse and washout behind wing sweeps, DES emergency permit is issued to clean up and stabilize

In the current condition, the stone arch is approximately 42' shorter than the original length, the two original wing sweeps still mark the original outlet of the culvert but are partially collapsed, the current outlet is partially collapsed and is experiencing undermining, the side slope and stream channel have been heavily armored with stone, the RR embankment has been pulled back away from the current outlet location and all trees have been cleared in the culvert outlet area, and the RR trail has been lowered, narrowed and shifted to the north slightly.

B. Lombard described the proposed work for Phase 2, which is intended to provide more permanent stabilization. The project has a total budget of \$400,000.00 through the Capital Fund, so the Bureau of Rail and Transit is partnering with the NHDOT Bureau of Bridge Maintenance for assistance with design and construction of Phase 2. The proposed work will install a 2' thick x 15' wide x 45' long concrete slab extending from the existing slab (proposed will be buried to meet current slab elevation) to the wing sweeps downstream with a 16" thick x 8' high x 45' long concrete walls on either side connecting to and supporting both the remaining stone arch and wing sweep remnants. The work will also pour an additional 8" thick x 33' wide x 14' long concrete slab apron to fill the area between the wing sweep remnants to ensure that the stone base is preserved from additional erosion. Fabric and riprap will be installed around the headwall and

along the new walls to prevent erosion during overtopping flood events. Finally, the RR embankment slope will be flattened slightly and the elevation of the RR corridor will be lowered in this area. The intent of this approach is to preserve the remaining stone arch, the remaining wing sweeps and prevent continued erosion of the stream.

Laura Black, NH Division of Historical Resources, asked if other alternatives were explored, especially reconstructing the stone arch or installing a closed concrete culvert. B. Lombard explained that it would be very difficult to reconstruct the arch as it was due to the loss of some of the collapsed stone and the specificity with which each stone must be placed due to hand cutting for placement during original construction. Installation of a closed structure is cost prohibitive given the limited funding, as is full replacement. Complete removal without constructing a new crossing was considered, however, this is cost prohibitive as well and would result in a loss of the resource and discontinuation of the rail line. Another alternative to stabilize just the outlet by reconstructing the headwall and installing a smaller pad to prevent undermining was also explored but is not ideal as it would require removal of the wing sweeps to prevent backwatering which causes undermining and erosion at the outlet. The proposed alternative will change the aesthetics of the current condition, which is already highly disturbed, but is the most cost effective, can be constructed quickly and will preserve the remaining stone arch and wing sweep features.

L. Black and Jamie Sikora, Federal Highway Administration, suggested seeking funds through other agencies such as Department of Natural and Cultural Resources. B. Lombard explained that previous requests for funding through their conservation programs have been denied. David Trubey, NH Division of Historical Resources, inquired about recreational use at the site. B. Lombard explained that it may be used occasionally by locals, particularly for snowmobiling, but does not see heavy recreational usage.

L. Black indicated that the project should remain under the existing RPR number (145) but that the changes warrant an amendment of the Adverse Effect memo, submittal of a Memorandum of Agreement and additional mitigation for the adverse effect caused by Phase 2. L. Black suggested that the survey and reporting efforts initiated in Phase 1 could be completed and a management plan created as mitigation. L. Black requested follow-up information including a written summary of the considered alternatives with a detailed comparison of impacts relative to cost and benefit, as well as a visual comparison of the original RR layout and the proposed changes to elevation and location.

Jackson 27709, X-A003(593), RPR 7832

Participants: Vicki Chase, Normandeau; John Watters, GPI; Joe Adams, Phil Brogan, Marc Laurin, NHDOT

Continued consultation on the rehabilitation of the bridge carrying NH Route 16 over the Ellis River (144/056) that has been determined eligible for listing on the National Register. Consultation for the rehabilitation of the bridge carrying Route 16 over the Ellis River.

John Watters introduced the project. NHDOT proposes to rehabilitate the bridge carrying NH Route 16 (Bridge 144/056) over the Ellis River in Jackson, NH. The existing bridge, built in 1938, features a 140 foot long concrete frame, two spans with a stone pier, and stone facing on the exterior surfaces and rail. The project will involve localized shallow concrete repairs of the bridge



US Army Corps
of Engineers®
New England District

U.S. Army Corps of Engineers
New Hampshire Programmatic General Permit (PGP)
Appendix B - Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)

1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination.
2. All references to “work” include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See PGP, GC 5 regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*		x
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?	x	
2.2 Are there proposed impacts to SAS, shellfish beds, special wetlands and vernal pools (see PGP, GC 26 and Appendix A)? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) website, www.nhnaturalheritage.org , specifically the book <u>Natural Community Systems of New Hampshire</u> .		x
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	x	
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)		x
2.5 The overall project site is more than 40 acres.		x
2.6 What is the size of the existing impervious surface area?	N/A	
2.7 What is the size of the proposed impervious surface area?	N/A	
2.8 What is the % of the impervious area (new and existing) to the overall project site?	N/A	
3. Wildlife	Yes	No
3.1 Has the NHB determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require a NHB determination.)	x	
3.2 Would work occur in any area identified as either “Highest Ranked Habitat in N.H.” or “Highest Ranked Habitat in Ecological Region”? (These areas are colored magenta and green, respectively, on NH Fish and Game’s map, “2010 Highest Ranked Wildlife Habitat by Ecological Condition.”) Map information can be found at: • PDF: www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm . • Data Mapper: www.granit.unh.edu . • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html .		x
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		x
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		x
3.5 Are stream crossings designed in accordance with the PGP, GC 21?	x	

4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?		x
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?		N/A
5. Historic/Archaeological Resources		
If a minor or major impact project, has a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) been sent to the NH Division of Historical Resources as required on Page 5 of the PGP?**	x	

*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.

** If project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.

NHDOT Westmoreland 41624

Stone Arch Culvert carrying Cheshire Railroad over White Bridge Brook in East Westmoreland

Photos taken by NHDOT Bureau of Rail and Transit, 11/27/2019



Figure 1. Looking east at the stone arch culvert outlet from previously cut back railroad fill slope



Figure 2. Looking north at the stone arch culvert outlet, including original wingwall remnants, from downstream



Figure 3. Looking northeast at stone arch culvert outlet and eastern wingwall remnant from downstream



Figure 4. Looking northwest at the stone arch culvert outlet and western wingwall remnant from downstream



Figure 5. Looking north at the stone arch culvert outlet including existing concrete invert



Figure 6. Looking north at the stone arch culvert outlet remaining blocks and stone riprap on banks



Figure 7. Looking northeast at remaining stone blocks at current culvert outlet

CONSTRUCTION SEQUENCE

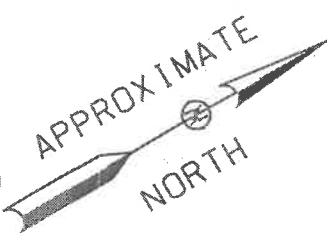
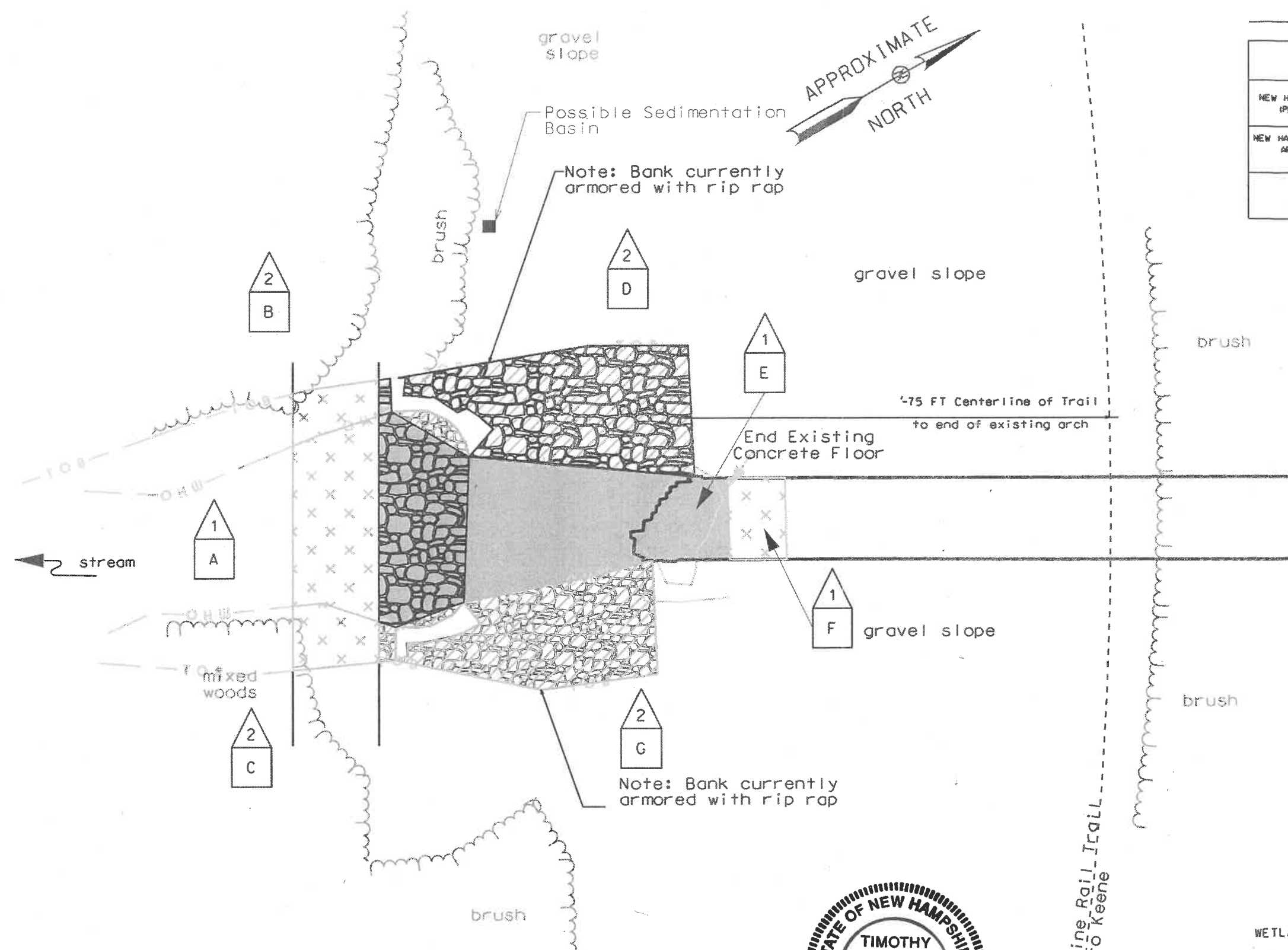
Work is anticipated to take approximately 2.5 months and is currently proposed to be done during the late summer. Work will be completed in one phase. Access to the outlet of the bridge will be from an existing gravel road at the SW quadrant of the bridge that was constructed during earlier emergency repairs.

1. Install erosion barrier controls prior to earth disturbance and jurisdictional impacts.
2. Install a clean water bypass pipe through the arch to maintain flows during construction as well as sandbag cofferdams to divert water away from the work areas and to the bypass pipe. If necessary, water within the work areas protected by the cofferdam will be pumped to a dewatering basin to allow for sediment to settle out prior to the water being introduced back into the system. Cofferdams and the clean water bypass pipe will be in place for the majority of the time it takes to complete wall and concrete invert installation. Work is proposed to be done during low flow; therefore, it is anticipated that the bypass pipe will only pass low flows or annual summer rainstorm volumes
3. Install pipe staging and formwork inside the work area to stabilize the remaining stone arch and allow for the headwall installation.
4. Excavate near the headwall and create a reinforced concrete ring and header to stabilize the remaining arch.
5. Excavate the existing rip rap slopes and existing stream bed between the arch and historic wing walls and construct reinforced concrete invert and walls. Pin floor and walls into the historic wings.
6. Install riprap in front of the historic wing walls to tie the concrete invert elevation to the existing stream bed. A gradation of stone will be used at these locations (see wetland impact plan for rip rap gradation).
7. Stabilize the any temporary impact area and remove sandbag coffer dam, clean water pipe, and other erosion controls once work is complete and the site is stable.

Note: The Project will utilize BMP's from the Best Management Practices manual during all phases of construction.



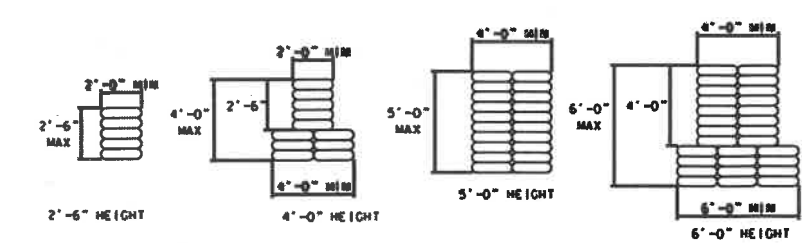
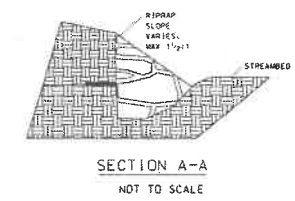
WETLAND IMPACTS
SCALE: 1" = 10'-0"



LEGEND

TYPE OF WETLAND IMPACT	SHADING/HATCHING	WETLAND DESIGNATION NUMBER
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	[Hatched Box]	## WETLAND IMPACT LOCATION
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP. OF ENGINEERS (PERMANENT WETLAND)	[Solid Grey Box]	## WETLAND MITIGATION AREA
TEMPORARY IMPACTS	[Box with + signs]	MITIGATION

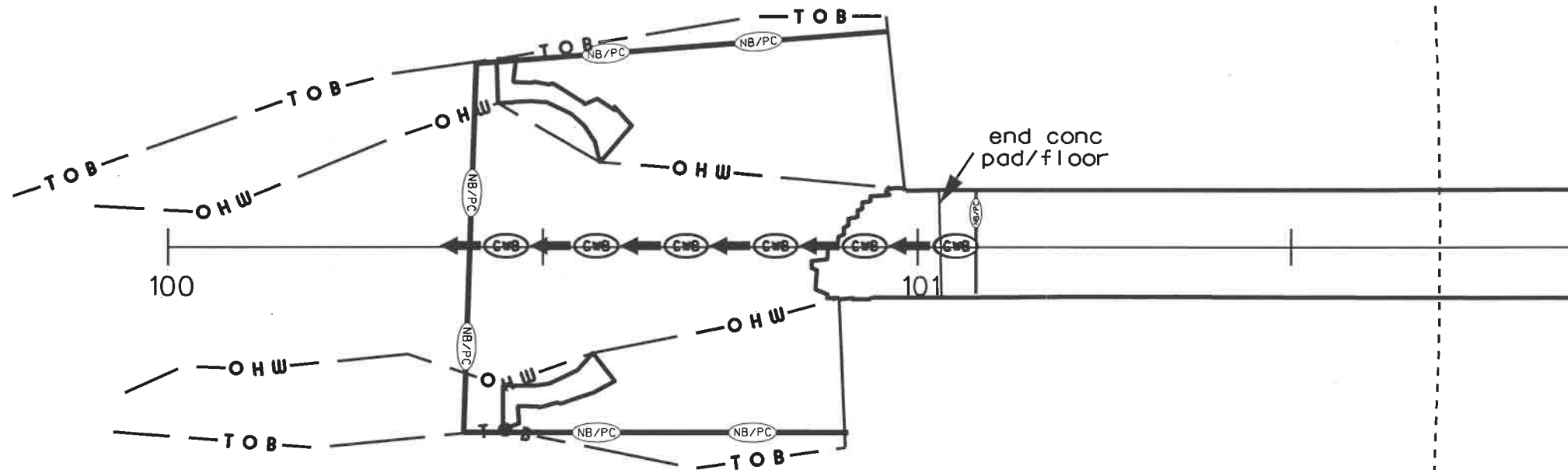
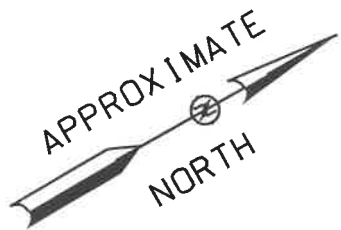
RIPRAP GRADATION
D15 < 12"
D50 < 18"
D100 < 36"



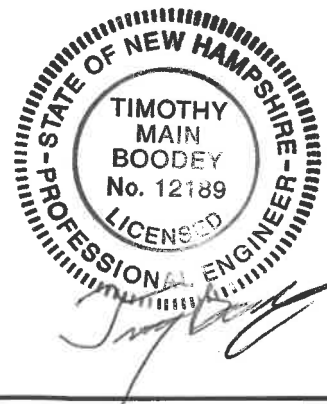
COFFERDAM DETAILS
NOT TO SCALE

WETLANDS DELINEATED BY MATT URBAN AND SARAH LARGE OCTOBER 2017

STATE OF NEW HAMPSHIRE									
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE MAINTENANCE									
TOWN	WESTMORELAND	BRIDGE NO.	100.6	STATE PROJECT	24761				
LOCATION CHESHIRE BRANCH REC TRAIL OVER UNNAMED BROOK									
WETLAND IMPACTS								BRIDGE SHEET	
DESIGNED BY DATE								1 OF 3	
DRAWN TMB 4/2020								FILE NUMBER	
QUANTITIES								WESTMORELAND	
ISSUE DATE								EXT	
REV. DATE								TOTAL SHEETS	
SHEET SCALE AS NOTED								3	



WETLAND IMPACTS
SCALE: 1" = 10'-0"



Centerline Rail Trail to Keene

STATE OF NEW HAMPSHIRE									
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE MAINTENANCE									
TOWN	WESTMORELAND	BRIDGE NO.	100.6	STATE PROJECT	24761				
LOCATION						CHESHIRE BRAND REC TRAIL OVER UNNAMED BROOK			
WETLAND KEY AND SUMMARY									
BRIDGE SHEET									
3 OF 3									
FILE NUMBER									
WESTMORELAND									
EXD									
TOTAL SHEETS									
3									
SHEET SCALE		AS NOTED		DESIGNED		BL	01/2019	CHECKED	
				DRAWN		TMB	4/2020	CHECKED	
				QUANTITIES				CHECKED	
				ISSUE DATE					
				REV. DATE					
				FISCAL YEAR		2020	CREW	7	SHEET NO.
									3

Westmoreland 100.06 RR Arch

WETLAND IMPACT SUMMARY												
WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	AREA IMPACTS						LINEAR STREAM IMPACTS FOR MITIGATION			
			PERMANENT				TEMPORARY		PERMANENT			
			N.H.W.B. (NON WETLAND)		N.H.W.B. & A.C.O.E. (WETLAND)				BANK LEFT	BANK RIGHT	CHANNEL	
			SF	LF	SF	LF						SF
1	R2UB12	A					474	15				
2	Bank	B					116	15				
2	Bank	C					139	15				
2	Bank	D	879	58					58			
1	R2UB12	E			1362	62					62	
1	R2UB12	F					142	10				
2	Bank	G	651	49					49			
			TOTAL	1530	107	1362	62	871	55	107	0	62

			PERMANENT IMPACTS:	2892	SF
			TEMPORARY IMPACTS:	871	SF
			TOTAL IMPACTS:	3763	SF

SUBTOTALS		PERMANENT				TEMPORARY	
		N.H.W.B. (NON WETLAND)		N.H.W.B. & A.C.O.E. (WETLAND)			
CLASS	DESCRIPTION	SF	LF	SF	LF	SF	LF
R2UB12	RIVERINE			1362	62	616	25
BANK	BANK	1530	107			255	30

STATE OF NEW HAMPSHIRE																																																																							
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE MAINTENANCE																																																																							
TOWN		WESTMORELAND		BRIDGE NO.		100.6		STATE PROJECT		24761																																																													
LOCATION		CHESHIRE BRAND REC TRAIL OVER UNNAMED BROOK																																																																					
WETLAND KEY AND SUMMARY										BRIDGE SHEET																																																													
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